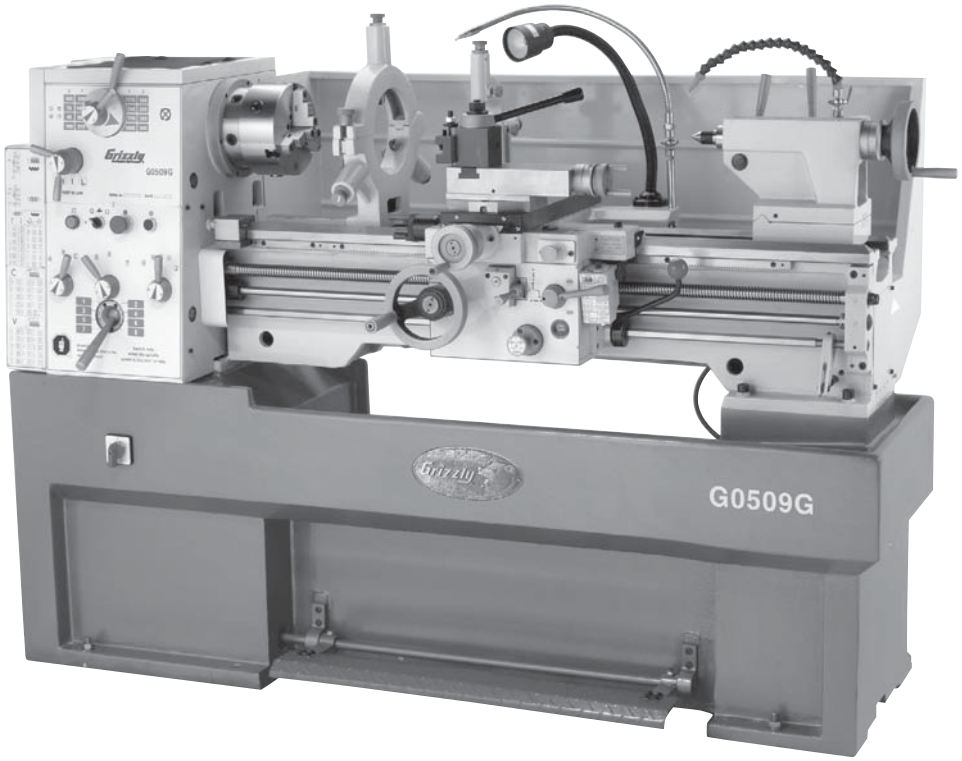
Grizzly Industrial, Inc.®

# MODEL G0509 & G0509G
# 16" x 40" LATHE
## OWNER'S MANUAL




**MODEL G0509G PROFESSIONAL
GUNSMITH'S LATHE SHOWN**

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#CR9246 PRINTED IN CHINA

# ⚠ WARNING!

**This manual provides critical safety instructions on the proper setup, operation, maintenance and service of this machine/equipment.**

**Failure to read, understand and follow the instructions given in this manual may result in serious personal injury, including amputation, electrocution or death.**

**The owner of this machine/equipment is solely responsible for its safe use. This responsibility includes but is not limited to proper installation in a safe environment, personnel training and usage authorization, proper inspection and maintenance, manual availability and comprehension, application of safety devices, blade/cutter integrity, and the usage of personal protective equipment.**

**The manufacturer will not be held liable for injury or property damage from negligence, improper training, machine modifications or misuse.**

# ⚠ WARNING!

**Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:**

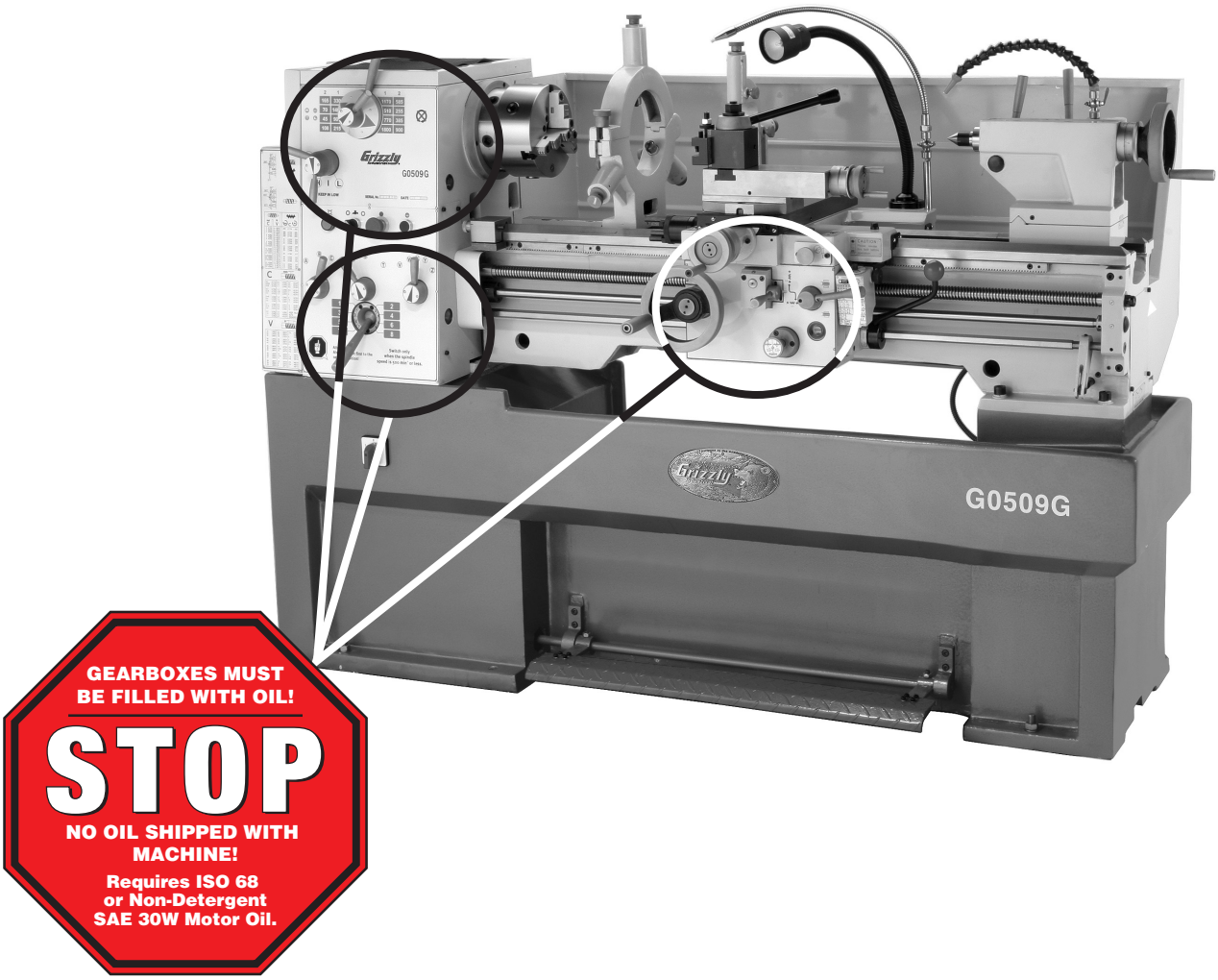
- **Lead from lead-based paints.**
- **Crystalline silica from bricks, cement and other masonry products.**
- **Arsenic and chromium from chemically-treated lumber.**

**Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: Work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.**

# MODEL G0509 & G0509G
# 16" x 40" LATHE
## MANUAL INSERT

The Model G0509/G0509G lathe is shipped without oil. You must fill the headstock, gearbox, and apron with oil, and complete the **Lubrication** procedures outlined in the **MAINTENANCE** section on **Page 40**. If you run this lathe without oil, even for a short period of time, drivetrain parts will be damaged and your lathe warranty will be void. We recommend using ISO 68 or a good grade non-detergent SAE 30W motor oil in your lathe. Make sure to change the oil immediately after lathe break-in.

*If you have any questions about this manual insert or machine lubrication and break-in, please contact Grizzly Technical Support at (570) 546-9663 or email techsupport@grizzly.com.*

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# INTRODUCTION

## Foreword

We are proud to offer the Model G0509/G0509G 16" x 40" Lathe. This machine is part of a growing Grizzly family of fine metalworking machinery. When used according to the guidelines set forth in this manual, you can expect years of trouble-free, enjoyable operation and proof of Grizzly's commitment to customer satisfaction.

We are pleased to provide this manual with the Model G0509/G0509G. It was written to guide you through assembly, review safety considerations, and cover general operating procedures. It represents our effort to produce the best documentation possible.

The specifications, drawings, and photographs illustrated in this manual represent the Model G0509/G0509G 16" x 40" Lathe as supplied when the manual was prepared. However, owing to Grizzly's policy of continuous improvement, changes may be made at any time with no obligation on the part of Grizzly. For your convenience, we always keep current Grizzly manuals available on our website at **www.grizzly.com**. Any updates to your machine will be reflected in these manuals as soon as they are complete. Visit our site often to check for the latest updates to this manual!

## Contact Info

If you have any comments regarding this manual, please write to us at the address below:

Grizzly Industrial, Inc.
C/O Technical Documentation Manager
P.O. Box 2069
Bellingham, WA 98227-2069
Email: manuals@grizzly.com

We stand behind our machines. If you have any service questions or parts requests, please call or write us at the location listed below.

Grizzly Industrial, Inc.
1203 Lycoming Mall Circle
Muncy, PA 17756
Phone: (570) 546-9663
Fax: (800) 438-5901
E-Mail: techsupport@grizzly.com
Web Site: http://www.grizzly.com

# MACHINE DATA SHEET

Customer Service #: (570) 546-9663 · To Order Call: (800) 523-4777 · Fax #: (800) 438-5901

## MODEL G0509 16" X 40" LATHE

**Product Dimensions:**

Weight..... 3100 lbs.
Length/Width/Height.....76-3/8 x 33-7/16 x 51-3/16 in.
Foot Print (Length/Width)..... 76 x 21-1/2 in.

**Shipping Dimensions:**

Type..... Wood Crate
Content..... Machine
Weight..... 3245 lbs.
Length/Width/Height..... 81 x 36 x 64 in.

**Electrical:**

Switch..... Magnetic Switches with Thermal Overload Protection
Switch Voltage..... 220V
Cord Length..... 6 ft.
Cord Gauge.....12 gauge
Recommended Breaker Size..... 20 amp
Plug..... No
Phase Converter..... G7978

**Motors:**

**Main**

Type.....2 Speed TEFC Induction
Horsepower.....3 - 4 HP
Voltage.....220V
Prewired.....220V
Phase.....Three
Amps.....15/10A
Speed.....3450/1725 RPM
Cycle.....60 Hz
Number Of Speeds..... 2
Power Transfer ..... Belt Drive to Gear
Bearings..... Shielded and Lubricated for Life

**Coolant**

Type.....Induction
Horsepower.....1/8 HP
Voltage.....220V
Prewired.....220V
Phase.....Three
Amps.....0.45A
Speed.....3450 RPM
Cycle.....60 Hz
Number Of Speeds..... 1
Power Transfer ..... Direct Drive
Bearings..... Shielded and Permanently Lubricated

**Main Specifications:**

**Operation Info**

| | |
|---|---|
| Swing Over Bed | 16 in. |
| Dist Between Centers | 40 in. |
| Swing Over Cross Slide | 10 in. |
| Swing Over Saddle | 9-7/8 in. |
| Swing Over Gap | 22 in. |
| Max Tool Bit Size | 3/4 in. |
| Compound Travel | 5-1/2 in. |
| Carriage Travel | 33 in. |
| Cross Slide Travel | 8-1/2 in. |

**Headstock Info**

| | |
|---|---|
| Spindle Bore | 2 in. |
| Spindle Taper | MT#6 |
| No Of Spindle Speeds | 16 |
| Range Of Spindle Speeds | 45 - 1800 RPM |
| Spindle Type | D1-6 Cam Lock |
| Spindle Bearings | Tapered Roller |

**Tailstock Info**

| | |
|---|---|
| Tailstock Travel | 4-3/4 in. |
| Tailstock Taper | MT#4 |
| Tailstock Barrel Diameter | 2 in. |

**Threading Info**

| | |
|---|---|
| No Of Inch Threads | 45 |
| Range Of Inch Threads | 2 - 72 TPI |
| Range Of Longitudinal Feeds | 0.002 - 0.067 in. |
| No Of Longitudinal Feeds | 17 |
| No Of Cross Feeds | 17 |
| Range Of Cross Feeds | 0.0011 - 0.038 in./rev. |
| No Of Metric Threads | 39 |
| Range Of Metric Threads | 0.2 - 14 mm |
| No Of Modular Threads | 18 |
| Range Of Modular Threads | 0.3 - 3.5 MP |
| No Of Diametrical Threads | 21 |
| Range Of Diametrical Threads | 8 - 44 DP |

**Dimensions**

| | |
|---|---|
| Bed Width | 10 in. |
| Leadscrew TPI | 4 |
| Leadscrew Length | 54 in. |
| Steady Rest Capacity | 4-7/8 in. |
| Follow Rest Capacity | 2-7/8 in. |
| Faceplate Size | 14 in. |
| Leadscrew Diameter | 1.120 in. |
| Feed Rod Diameter | 0.745 in. |
| Floor To Center Height | 45 in. |

**Construction**

| | |
|---|---|
| Base Construction | Cast Iron |
| Headstock Construction | Cast Iron |
| Headstock Gears Construction | Flame Hardened Steel |
| Bed Construction | Induction Hardened Cast Iron |
| Body Construction | Cast Iron |
| Stand Construction | Cast Iron |
| Paint | Epoxy |

**Other**

Kilowatt Output.....3.077

**Other Specifications:**

Country Of Origin .....China
Warranty ..... 1 Year
Serial Number Location ..... Front of Headstock
Assembly Time .....2 hours

**Features:**

Coolant System
Foot Brake
Full Length Splash Guard
Halogen Light
Headstock Gears Run in an Oil Bath
Inch/Metric Dials
Jog Button and Emergency Stop
Precision Ground V-Bed is Made of Meehanite Casting
Threading Dial
Totally Enclosed Universal Gearbox Allows Cutting of Inch, Metric, Whitworth, Module, and Diametral Threads

**Accessories Included:**

#4 to 6 Morse Taper Spindle Nose Sleeve
12" 4-Jaw Chuck
14" Face Plate
8" 3-Jaw Chuck with 2 Piece Jaws
Center Sleeve
Centers
Follow Rest
Manual
MT#4 Dead Center
Quick Change Tool Post
Service Tools
Steady Rest
Toolbox

# MACHINE DATA SHEET

Customer Service #: (570) 546-9663 · To Order Call: (800) 523-4777 · Fax #: (800) 438-5901

## MODEL G0509G 16" X 40" 3-PHASE GUNSMITH METAL LATHE

**Product Dimensions:**

Weight..... 2976 lbs.
Length/Width/Height.....76-3/8 x 33-7/16 x 51-3/16 in.
Foot Print (Length/Width)..... 76 x 21-1/2 in.

**Shipping Dimensions:**

Type..... Wood Crate
Content..... Machine
Weight..... 3248 lbs.
Length/Width/Height..... 82 x 33 x 65 in.

**Electrical:**

Switch.....Jog Button and Emergency Stop
Switch Voltage..... 220V
Cord Length..... 6 ft.
Cord Gauge.....12 gauge
Recommended Breaker Size..... 20 amp
Plug..... No
Phase Converter..... G7978

**Motors:**

**Spindle**

Type..... 2-Speed Induction
Horsepower.....3 - 4 HP
Voltage.....220V
Prewired.....220V
Phase.....Three
Amps.....17/8.5A
Speed.....1750/875 RPM
Cycle.....60 Hz
Number Of Speeds..... 2
Power Transfer ..... Belt Drive to Gear
Bearings..... Shielded and Lubricated for Life

**Coolant**

Type.....Induction
Horsepower.....1/8 HP
Voltage.....220V
Prewired.....220V
Phase.....Three
Amps.....0.45A
Speed.....3450 RPM
Cycle.....60 Hz
Number Of Speeds..... 1
Power Transfer .....Direct Drive
Bearings..... Shielded and Permanently Lubricated

**Main Specifications:**

**Operation Info**

| | |
|---|---|
| Swing Over Bed | 16 in. |
| Dist Between Centers | 40 in. |
| Swing Over Cross Slide | 10 in. |
| Swing Over Saddle | 9-7/8 in. |
| Swing Over Gap | 22 in. |
| Max Tool Bit Size | 3/4 in. |
| Compound Travel | 5-1/2 in. |
| Carriage Travel | 33 in. |
| Cross Slide Travel | 8-1/2 in. |

**Headstock Info**

| | |
|---|---|
| Spindle Bore | 2 in. |
| Spindle Size | 3-9/64 in. |
| Spindle Taper | MT#6 |
| No Of Spindle Speeds | 16 |
| Range Of Spindle Speeds | 45 - 1800 RPM |
| Spindle Type | D1-6 Camlock |
| Spindle Bearings | Super High Precision |

**Tailstock Info**

| | |
|---|---|
| Tailstock Travel | 4-3/4 in. |
| Tailstock Taper | MT#4 |
| Tailstock Barrel Diameter | 2 in. |

**Threading Info**

| | |
|---|---|
| No Of Inch Threads | 45 |
| Range Of Inch Threads | 2 - 72 TPI |
| Range Of Longitudinal Feeds | 0.002 - 0.067 in. |
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| Range Of Cross Feeds | 0.0011 - 0.038 in./rev. |
| No Of Metric Threads | 39 |
| Range Of Metric Threads | 0.2 - 14 mm |
| No Of Modular Threads | 18 |
| Range Of Modular Threads | 0.3 - 3.5 MP |
| No Of Diametrical Threads | 21 |
| Range Of Diametrical Threads | 8 - 44 DP |

**Dimensions**

| | |
|---|---|
| Bed Width | 10 in. |
| Leadscrew TPI | 4 |
| Leadscrew Length | 54 in. |
| Steady Rest Capacity | 1/2 - 4-1/2 in. |
| Follow Rest Capacity | 1/2 - 2-1/2 in. |
| Faceplate Size | 14 in. |
| Leadscrew Diameter | 1.120 in. |
| Feed Rod Diameter | 0.745 in. |
| Floor To Center Height | 47 in. |

**Construction**

| | |
|---|---|
| Base Construction | Cast Iron |
| Headstock Construction | Cast Iron |
| Headstock Gears Construction | Flame Hardened Steel |
| Bed Construction | Induction Hardened Cast Iron |
| Body Construction | Cast Iron |
| Stand Construction | Cast Iron |
| Paint | Epoxy |

**Other**

Kilowatt Output.....3.077

**Other Specifications:**

Country Of Origin .....China
Warranty ..... 1 Year
Serial Number Location ..... Front of Headstock
Assembly Time .....2 hours

**Features:**

Precision Gound and Hardened V-bed is Made of Meehanite Casting
Totally Enclosed Universal Gearbox Allows Cutting of Inch, Metric, Whitworth, Modular and Diametral Threads
Headstock Gears Runs in an Oil Bath and are Hardened and Precision Ground for Smooth, Quiet and Vibration
Dual Inch/Metric Dials
Halogen Light
Coolant System
Full Length Splash Guard
Steady Rest and Follow Rest have Roller Tips
Dual Coolant Nozzles for Chambering Barrels
Extra Long Tailstock for Support
Tailstock can be Tightened with a Torque Wrench for Precise Alignment of Centers
Four Brass Tipper Bolts for Supporting Gun Barrels

**Accessories Included:**

#4 to 6 Morse Taper Spindle Nose Sleeve
12" 4-Jaw Chuck
14" Face Plate
8" 3-Jaw Chuck
Center Sleeve
Centers
Follow Rest with Roller Tips
MT#4 Dead Center
Quick Change Tool Post
Service Tools
Steady Rest with Roller Tips
Toolbox

# Identification

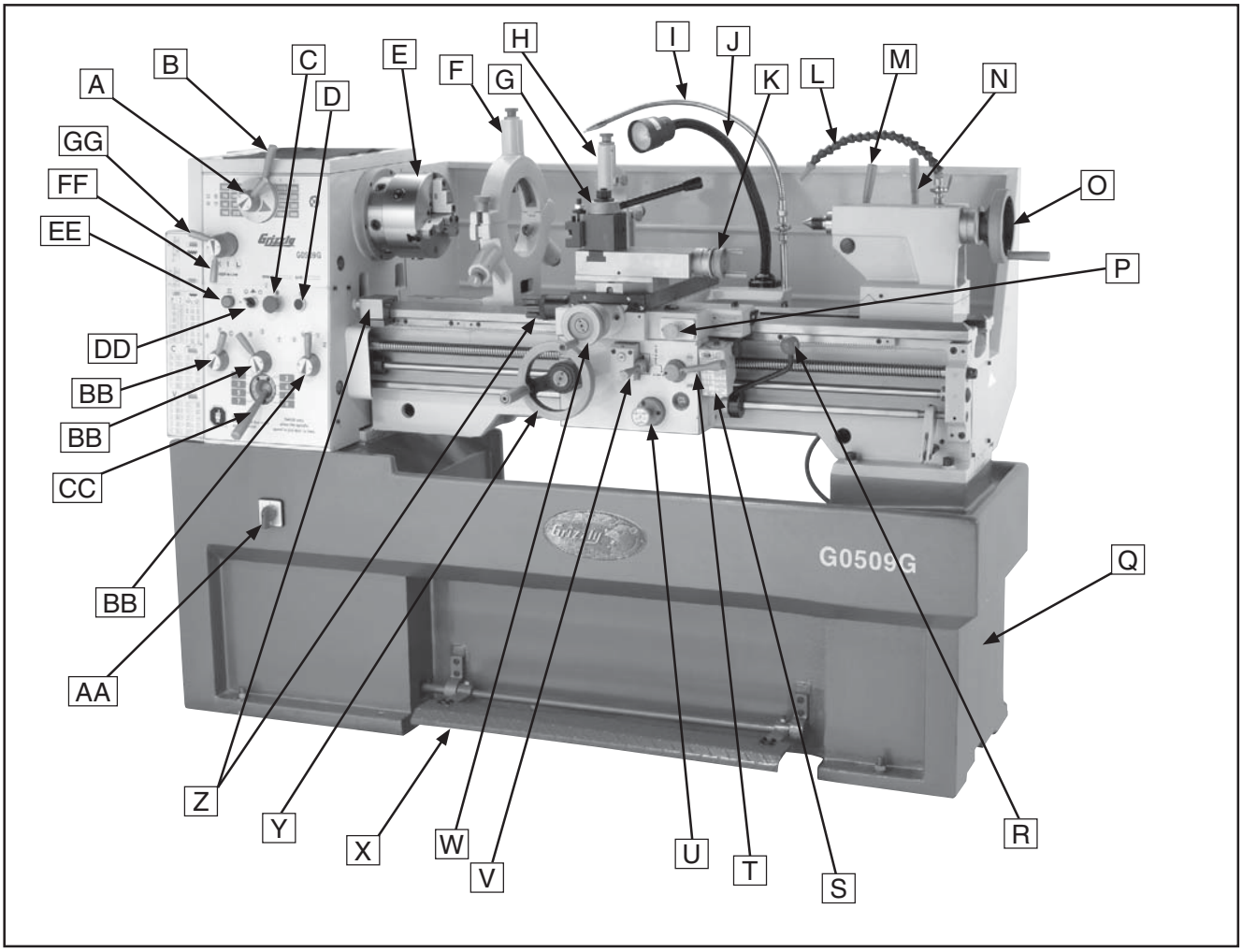



**Figure 1.** Model G0509G identification.

**A.** Headstock Low/High Range Lever
**B.** Headstock Speed Lever
**C.** Emergency Stop/RESET Button
**D.** Inching/Jog Button
**E.** 3-Jaw Chuck with 2-Piece Jaws
**F.** Steady Rest
**G.** Quick Change Tool Holder and Post
**H.** Follow Rest
**I.** Coolant Nozzle A
**J.** Halogen Work Lamp
**K.** Compound Rest Handwheel & Inch/Metric Sleeve
**L.** Coolant Nozzle B
**M.** Tailstock Barrel Lock Lever
**N.** Tailstock Lock Lever
**O.** Tailstock Handwheel
**P.** Apron Hand Pump
**Q.** Coolant Pump and Tank Access Panel
**R.** Spindle Rotation ON/OFF Lever
**S.** Threading Dial Assembly
**T.** Halfnut Lever
**U.** Apron Feed Direction Knob
**V.** Feed Selector Lever
**W.** Cross Slide Handwheel & Inch/Metric Sleeve
**X.** Foot Brake
**Y.** Apron Handwheel
**Z.** Manual Micrometer Stop
**AA.** Motor High/Low Range Switch
**BB.** Gearbox Ratio Levers
**CC.** Gearbox speed range lever
**DD.** Pump ON/OFF Switch
**EE.** Power ON Lamp
**FF.** Gearbox High/Low Range Lever
**GG.** Leadscrew/Feed Rod Direction Lever

# SECTION 1: SAFETY

## ⚠WARNING

## For Your Own Safety, Read Instruction Manual Before Operating this Machine

**The purpose of safety symbols is to attract your attention to possible hazardous conditions. This manual uses a series of symbols and signal words intended to convey the level of importance of the safety messages. The progression of symbols is described below. Remember that safety messages by themselves do not eliminate danger and are not a substitute for proper accident prevention measures.**

**⚠DANGER** **Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.**

**⚠WARNING** **Indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.**

**⚠CAUTION** **Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury. It may also be used to alert against unsafe practices.**

***NOTICE*** **This symbol is used to alert the user to useful information about proper operation of the machine.**

## ⚠WARNING

## Safety Instructions for Machinery

1. **READ THE ENTIRE MANUAL BEFORE STARTING MACHINERY.** Machinery presents serious injury hazards to untrained users.
2. **ALWAYS USE ANSI APPROVED SAFETY GLASSES WHEN OPERATING MACHINERY.** Everyday eyeglasses only have impact resistant lenses—they are NOT safety glasses.
3. **ALWAYS WEAR A NIOSH APPROVED RESPIRATOR WHEN OPERATING MACHINERY THAT PRODUCES DUST.** Wood dust can cause severe respiratory illnesses.
4. **ALWAYS USE HEARING PROTECTION WHEN OPERATING MACHINERY.** Machinery noise can cause permanent hearing loss.
5. **WEAR PROPER APPAREL.** DO NOT wear loose clothing, gloves, neckties, rings, or jewelry that can catch in moving parts. Wear protective hair covering to contain long hair and wear non-slip footwear.
6. **NEVER OPERATE MACHINERY WHEN TIRED OR UNDER THE INFLUENCE OF DRUGS OR ALCOHOL.** Be mentally alert at all times when running machinery.

# ⚠WARNING
# Safety Instructions for Machinery

7. **ONLY ALLOW TRAINED AND PROPERLY SUPERVISED PERSONNEL TO OPERATE MACHINERY.** Make sure operation instructions are safe and clearly understood.

8. **KEEP CHILDREN AND VISITORS AWAY.** Keep all children and visitors a safe distance from the work area.

9. **MAKE WORKSHOP CHILDPROOF.** Use padlocks, master switches, and remove start switch keys.

10. **NEVER LEAVE WHEN MACHINE IS RUNNING.** Turn power ***OFF*** and allow all moving parts to come to a complete stop before leaving machine unattended.

11. **DO NOT USE IN DANGEROUS ENVIRONMENTS.** DO NOT use machinery in damp, wet locations, or where any flammable or noxious fumes may exist.

12. **KEEP WORK AREA CLEAN AND WELL LIGHTED.** Clutter and dark shadows may cause accidents.

13. **USE A GROUNDED EXTENSION CORD RATED FOR THE MACHINE AMPERAGE.** Grounded cords minimize shock hazards. Undersized cords create excessive heat. Always replace damaged extension cords.

14. **ALWAYS DISCONNECT FROM POWER SOURCE BEFORE SERVICING MACHINERY**. Make sure switch is in OFF position before reconnecting.

15. **MAINTAIN MACHINERY WITH CARE.** Keep blades sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.

16. **MAKE SURE GUARDS ARE IN PLACE AND WORK CORRECTLY BEFORE USING MACHINERY.**

17. **REMOVE ADJUSTING KEYS AND WRENCHES.** Make a habit of checking for keys and adjusting wrenches before turning machinery ***ON***.

18. **CHECK FOR DAMAGED PARTS BEFORE USING MACHINERY.** Check for binding or misaligned parts, broken parts, loose bolts, and any other conditions that may impair machine operation. Repair or replace damaged parts before operation.

19. **USE RECOMMENDED ACCESSORIES.** Refer to the instruction manual for recommended accessories. Improper accessories increase risk of injury.

20. **DO NOT FORCE MACHINERY.** Work at the speed for which the machine or accessory was designed.

21. **SECURE WORKPIECE.** Use clamps or a vise to hold the workpiece when practical. A secured workpiece protects your hands and frees both hands to operate the machine.

22. **DO NOT OVERREACH.** Maintain stability and balance at all times.

23. **MANY MACHINES CAN EJECT WORKPIECES TOWARD OPERATOR.** Know and avoid conditions that cause the workpiece to "kickback."

24. **ALWAYS LOCK MOBILE BASES (IF USED) BEFORE OPERATING MACHINERY**.

25. **CERTAIN DUST MAY BE HAZARDOUS** to the respiratory systems of people and animals, especially fine dust. Be aware of the type of dust you are exposed to and always wear a respirator designed to filter that type of dust.

# ⚠WARNING
# Additional Safety Instructions for Lathes

1. **UNDERSTANDING THE MACHINE:** Read and understand this manual before operating machine.

2. **CLEANING MACHINE:** To avoid entanglement and lacerations, do not clear chips by hand. Use a brush, and never clear chips while the lathe is operating.

3. **USING CORRECT TOOLING:** Always select the right cutter for the job, and make sure cutters are sharp. The right tool decreases strain on the lathe components and reduces the risk of unsafe cutting.

4. **ELIMINATING PROJECTILE HAZARDS:** Always remove the chuck key, and never walk away from the lathe with the chuck key installed. Always make sure workpiece is securely held in chuck before starting lathe. A workpiece thrown from the chuck could cause severe injury.

5. **AVOIDING OVERLOADS:** Always use the appropriate feed and speed rates.

6. **PREVENTING A CUTTING TOOL/CHUCK CRASH:** Always release automatic feeds after completing a job, and never leave lathe unattended while it is running.

7. **AVOIDING STARTUP INJURIES:** Make sure workpiece, cutting tool, and tool post have adequate clearance before starting lathe. Check chuck clearance and saddle clearance before starting the lathe. Make sure spindle RPM is set correctly for part diameter before starting the lathe. Large parts can be ejected from the chuck if the chuck speed is set too high.

8. **CHUCK SAFETY:** Chucks are surprisingly heavy and awkward to hold, so protect your hands and the lathe ways. Always use a chuck cradle or piece of plywood over the lathe ways.

9. **WORKPIECE SUPPORT:** Support a long workpiece if it extends from the headstock so it will not wobble violently when the lathe is turned ***ON***. If workpiece extends more than 2.5 times its diameter from the chuck, support it by a center or steady rest, or it may deflect and fall out of the chuck while cutting.

10. **AVOIDING ENTANGLEMENT INJURIES:** Never attempt to slow or stop the lathe chuck or mill spindle by hand; and tie back long hair, ponytails, loose clothing, and sleeves so they do not dangle.

## ⚠WARNING

**Like all machinery there is potential danger when operating this machine. Accidents are frequently caused by lack of familiarity or failure to pay attention. Use this machine with respect and caution to lessen the possibility of operator injury. If normal safety precautions are overlooked or ignored, serious personal injury may occur.**

## ⚠CAUTION

**No list of safety guidelines can be complete. Every shop environment is different. Always consider safety first, as it applies to your individual working conditions. Use this and other machinery with caution and respect. Failure to do so could result in serious personal injury, damage to equipment, or poor work results.**

# Glossary of Terms

The following is a list of common definitions, terms and phrases used throughout this manual as they relate to this lathe and metalworking in general. Become familiar with these terms for assembling, adjusting or operating this machine. Your safety is **VERY** important to us at Grizzly!

**Arbor:** A machine shaft that supports a cutting tool.

**Backlash:** Wear in a screw or gear mechanism that may result in slippage, vibration, and loss of tolerance.

**Carriage:** A main housing that consists of the apron and the saddle.

**Cross Slide:** A fixture attached to the lathe carriage that holds the compound rest and can be moved in and out.

**Compound Rest:** A fixture attached to the cross slide that holds the tool holder and can be moved in and out.

**Cutting Speed:** The distance that a point on a cutter moves in one minute, expressed in meters or feet per minute.

**Dial Indicator:** An instrument used in setup and inspection work that shows on a dial the amount of error in size or alignment of a part.

**Facing:** In lathe work, cutting across the end of a workpiece, usually to machine a flat surface.

**Feed:** The movement of a cutting tool into a workpiece.

**Gib:** A tapered wedge located along a sliding member to take up wear or to ensure a proper fit.

**Headstock:** The major lathe component that houses the spindle and motor drive system to turn the workpiece.

**Lathe Center:** A lathe accessory with a 60° point which is inserted into the headstock or tailstock of the lathe and is used to support the workpiece.

**Leadscrew:** The long screw that is driven by the end gears and supplies power to the carriage.

**Saddle:** The upper portion of carriage that rides on the lathe ways and supports the cross feed and the follow rest.

**Spindle:** The revolving shaft that holds and drives the workpiece.

**Tailstock:** A moveable fixture opposite of the headstock on a lathe that has a spindle used to support one end of a workpiece and for holding tools.

**Tool Post:** The part of the compound rest that holds the tool holder.

**Turret:** A machine fixture that holds multiple tools and can be revolved and indexed to position.

**Ways:** The precision machined and flat tracks on which the carriage and tailstock slide.

# SECTION 2: CIRCUIT REQUIREMENTS

## 220V 3-Phase Operation

**⚠WARNING**

**Serious personal injury could occur if you connect the machine to the power source before you have completed the set up process. DO NOT connect the machine to the power source until instructed to do so.**

### Full Load Amperage Draw w/Pump

G0509 Low-Sp: 3HP 220V 3-Ph ..... 11 Amps
High-Sp: 4HP 220V 3-Ph ..... 16 Amps

G0509G Low-Sp: 3.8HP 220V 3-Ph .... 9.5 Amps
High-Sp: 4.5HP 220V 3-Ph .... 18 Amps

### Circuit Requirements

We recommend connecting your machine to a dedicated and grounded circuit that is rated for the amperage given below. Never replace a circuit breaker on an existing circuit with one of higher amperage without consulting a qualified electrician to ensure compliance with wiring codes. **If you are unsure about the wiring codes in your area or you plan to connect your machine to a shared circuit, consult a qualified electrician.**

Minimum Circuit.....30 Amp

### 220V Connection Type

For 220V 3-phase connection of this lathe, we recommend wiring your machine with a L15-30 plug and recepticle. A qualified electrician should determine the best cord to use in your environment.

G0509 & G0509G 220V 3-Phase ..... L15-30

### Grounding

In the event of an electrical short, grounding reduces the risk of electric shock. The grounding wire in the power cord must be properly connected to the grounding prong on the plug; likewise, the outlet must be properly installed and grounded. All electrical connections must be made in accordance with local codes and ordinances.

### Extension Cords

We do not recommend the use of extension cords. Instead, arrange the placement of your equipment and the installed wiring to eliminate the need for extension cords.

**⚠WARNING**

**Electrocution or fire could result if this machine is not grounded correctly or if your electrical configuration does not comply with local and state codes. Ensure compliance by checking with a qualified electrician!**

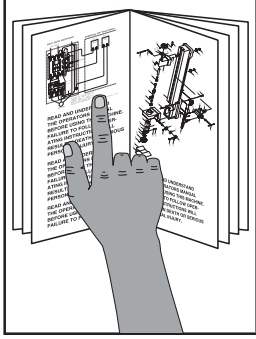
## Phase Converter

If your lathe is connected to a phase converter for 3-phase power, the power from the manufactured power leg (sometimes called the wild wire or manufactured leg) can fluctuate.

Make sure that when you connect the lathe to the phase converter that you connect the "Wild Wire" or the "Manufactured Leg" from the phase converter to the lathe input lead **L2**. Otherwise, your lathe may not start properly, and magnetic switch chatter and transformer damage will occur. If swapping motor rotation direction, swap **L1** & **L3**, but do not touch **L2**.

# SECTION 3: SETUP

## Setup Safety

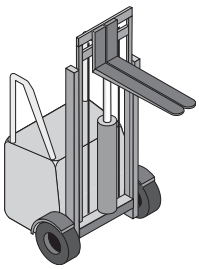


**⚠WARNING**

**This machine presents serious injury hazards to untrained users. Read through this entire manual to become familiar with the controls and operations before starting the machine!**

**⚠WARNING**

**Wear safety glasses during the entire set up process!**



**⚠WARNING**

**This machine and its components are very heavy. Use power lifting equipment such as a fork lift or hoist to move heavy items.**

## Items Needed for Setup

The following items are needed to complete the setup process, but are not included with your machine:

| Description | Qty |
|---|---|
| • Fork Lift or Hoist (Rated 5000 lbs.) | 1 |
| • Lifting Straps (Rated 5000 lbs.) | 1 |
| • Lifting Hooks (Rated 5000 lbs.) | 1 |
| • Machinist's Level | 1 |

## Unpacking

Your machine was carefully packaged for safe transportation. Disassemble the crate and remove the packaging materials from around your machine to inspect it. If you discover the machine is damaged, *please immediately call Customer Service at (570) 546-9663 for advice.*

Save the containers and all packing materials for possible inspection by the carrier or its agent. *Otherwise, filing a freight claim can be difficult.*

When you are completely satisfied with the condition of your shipment, inventory the contents.

# Inventory

After all the parts have been removed from the shipping crate, you should have the following items with your lathe.

**Installed Components (Figure 2)** **Qty.**

**A.** 8" Three-Jaw Chuck w/Jaws ..... 1
**B.** Steady Rest ..... 1
**C.** Quick Change Tool Post w/Tool Holder ..... 1
**D.** Follow Rest ..... 1

**Loose Components (Figure 3)**

**E.** 12" Four-Jaw Universal Chuck ..... 1
**F.** 14" Faceplate ..... 1
**G.** Little Red Tool Box ..... 1
**H.** Tool Holder (1-Installed) ..... 2
**I.** Wrench Set 6/7, 8/10, 9/11, 11/13, 12/14, 17/19, 22/24, and 27/30mm ..... 1 ea
**J.** Camlock T-Wrench ..... 1
**K.** Tool Holder/Apron Lock T-Wrench ..... 1
**L.** 4-Jaw Chuck T-Wrench ..... 1
**M.** 3-Jaw Chuck T-Wrench ..... 1
**N.** 4-Jaw Chuck Camlock Studs ..... 6
**O.** Oil Bottle ..... 1
**P.** MT#6 to MT#4 Spindle Sleeve Adapter ..... 1
**Q.** Cast-Iron Feet ..... 6
**R.** Jacking Studs W/Nuts ..... 6
**S.** Hex Wrench Set 2, 2.5, 3, 4, 5, 6, 8, 10, and 12mm ..... 1 ea
**T.** Spider Screws ..... 4
**U.** #2 Phillips Screwdriver ..... 1
**V.** #2 Standard Screwdriver ..... 1
**W.** Tailstock Lock Lever ..... 1
**X.** Handwheel Handle Set ..... 1 ea
**Y.** Carbide Tip Dead Center MT#4 ..... 1
**Z.** Standard Tip Dead Center MT#4 ..... 1

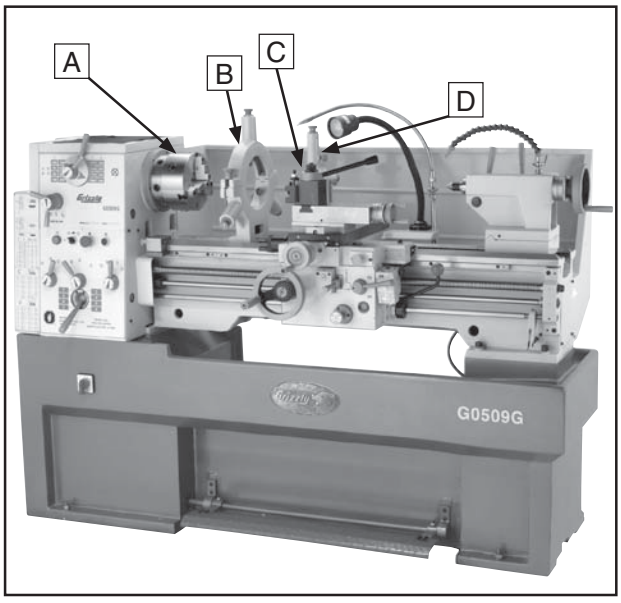



**Figure 2.** Installed components.

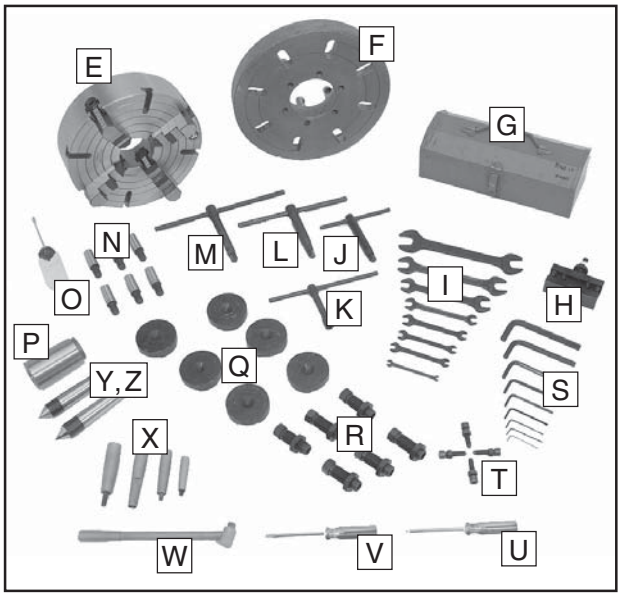



**Figure 3.** Packaged components.

## *NOTICE*

**Some hardware/fasteners on the inventory list may arrive pre-installed on the machine. Check these locations before assuming that any items from the inventory list are missing.**

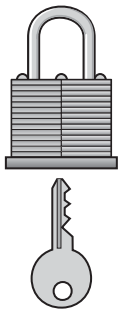
# Site Considerations

## Floor Load

Your lathe is a heavy load distributed in a small footprint. Place this machine on concrete floors only. The floor MUST be level, or the lathe frame and ways may distort over time.

## Placement Location

Consider existing and anticipated needs, service panel access, length of material to be loaded into the lathe, and space for auxiliary stands, work tables or other machinery when establishing a location for your lathe (see **Figure 4** for minimum wall clearances).



**⚠CAUTION**

**Children and visitors may be seriously injured if unsupervised. Lock all entrances to the shop when you are away. DO NOT allow unsupervised children or visitors in your shop at any time!**

# Clean Up

The unpainted surfaces are coated with a waxy oil to prevent corrosion during shipment. Remove this protective coating with a solvent cleaner or citrus-based degreaser such as Grizzly's G7895 Citrus Degreaser. To clean thoroughly, some parts must be removed.

**⚠WARNING**

**Gasoline and petroleum products have low flash points and can explode or cause fire if used to clean machinery. DO NOT use these products to clean the machinery.**

**⚠CAUTION**

**Many cleaning solvents are toxic if inhaled. Minimize your risk by only using these products in a well ventilated area.**

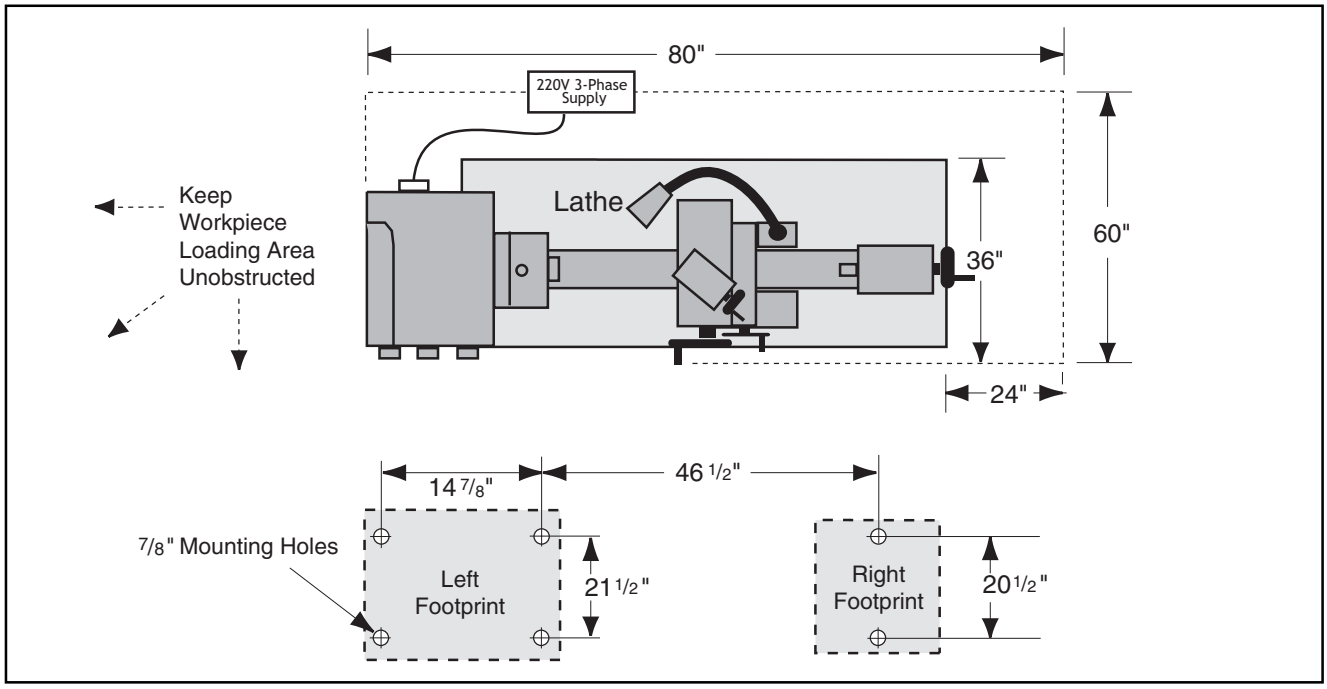
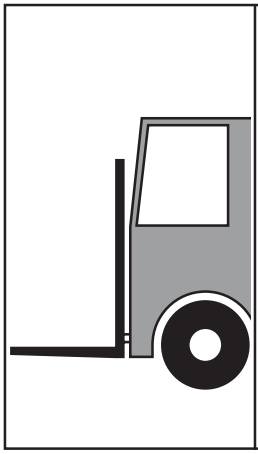



**Figure 4.** Machine clearances and bolt pattern.

# Lifting & Moving the Lathe



**⚠WARNING**

**This lathe is an extremely heavy machine. Serious personal injury or death may occur if safe lifting and moving methods are not followed. Seek assistance from a professional rigger if you are unsure about your abilities or maximum load ratings of your lifting equipment.**

This lathe can be placed on the included leveling studs and cast-iron feet. If the lathe must be secured to the floor, refer to a professional machine installer for options. In either case, the lathe must be sitting flat at each mounting point, and the ways must be perfectly level. The bed cannot be twisted or bent. If a misalignment condition arises, shim the lathe where it mounts to the floor, or adjust the feet studs until the bed and ways are in alignment as shown by precision machinist's levels.

Make sure the slings or chains are routed so when the lathe is lifted and the chains or straps are tight, the control rod, lead screw, or feed rod are not bent. Remember, the headstock carries most of the weight of this machine (see **Figure 5**) for safe chain or strap routing and connection.

**Figure 5.** Lifting rod setup for the lathe.

Double check weight ratings and connections of the lifting system, cables, chains pins, and clevis links before lifting and moving the lathe to your prepared location. Do not attempt to lift or move this lathe if you are unsure about any aspect. Seek assistance from a professional rigger if required.

When lifting, you must move the carriage and tailstock to the right and lock into place as shown in **Figure 6** to provide counter-balance.

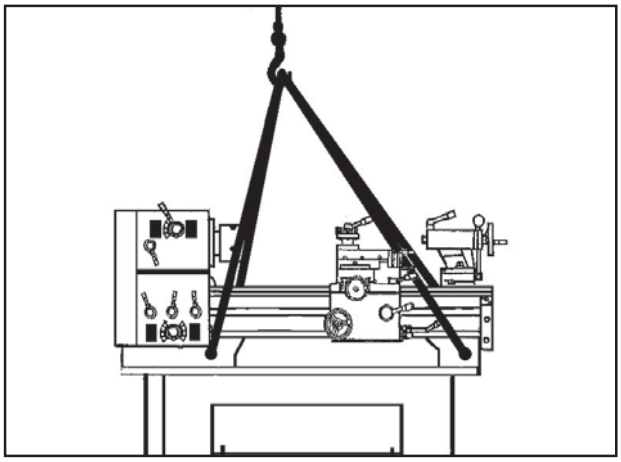


**Figure 6.** Lifting strap locations.

# Mounting to Shop Floor

We recommend that the lathe is bolted to the floor. Because floor materials may vary, floor mounting hardware is not included. Since this is a precision machine, it is important to level the machine with a precision level when mounting.

## Bolting to Concrete Floors

Lag shield anchors with lag bolts (**Figure 7**) and anchor studs (**Figure 8**) are two popular methods for anchoring an object to a concrete floor. We suggest you research the many options and methods for mounting your machine and choose the best that fits your specific application.

***NOTICE***

**Anchor studs are stronger and more permanent alternatives to lag shield anchors; however, they will stick out of the floor, which may cause a tripping hazard if you decide to move your machine.**

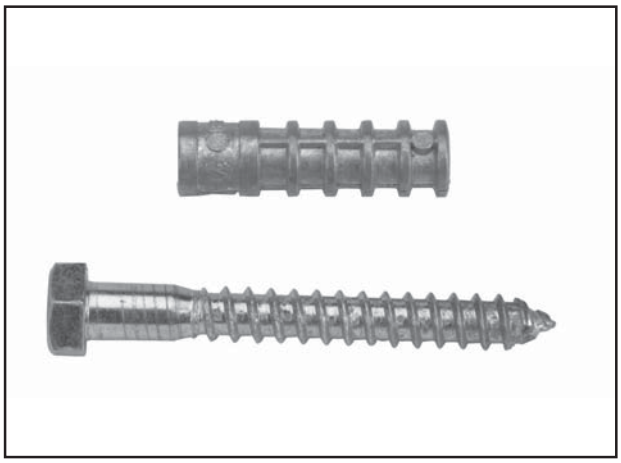


**Figure 7**. Typical lag shield anchor and lag bolt.

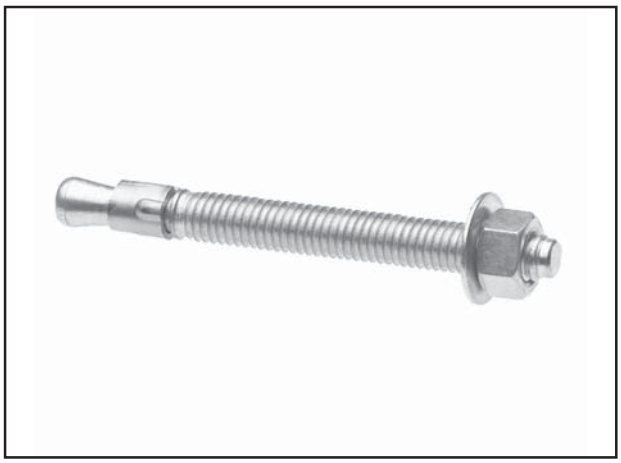


**Figure 8**. Typical anchor stud.

# Test Run & Break-In

## *NOTICE*

**NEVER shift lathe gears when lathe is operating, and make sure both the half-nut lever and the feed lever are disengaged before you start the lathe! Otherwise the lathe will feed the apron into the chuck or tailstock, causing severe lathe damage.**

The purpose of the test run is to make sure the lathe and its safety features operate correctly. If you encounter any problems, stop the lathe and refer to **Troubleshooting** on **Page 43** for corrections.

**To begin the test run & break-in procedure:**

1. Make sure the lathe is lubricated and the headstock oil level is full. Refer to **Lubrication** on **Page 41**.

2. Make sure the chuck is correctly secured to the spindle. Refer to **Mounting Chuck and Faceplate** on **Page 35** for details.

3. Disengage the feed and half-nut levers, and move the spindle ON/OFF lever to the neutral position, as shown in **Figure 9**.

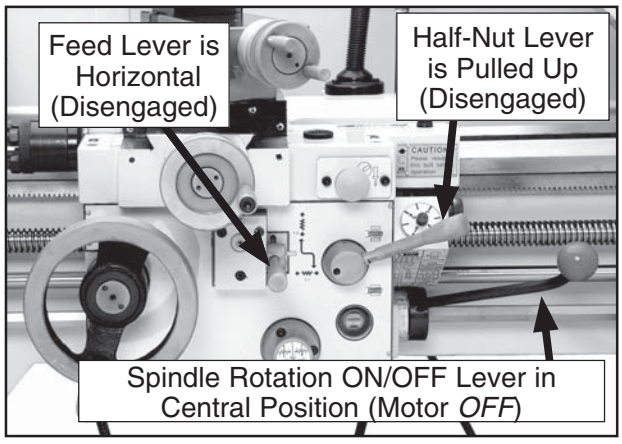

Feed Lever is Horizontal (Disengaged)
Half-Nut Lever is Pulled Up (Disengaged)
Spindle Rotation ON/OFF Lever in Central Position (Motor *OFF*)

**Figure 9.** Apron controls positioned for test run.

4. Rotate the red emergency stop button (**Figure 10**) clockwise so it pops out.

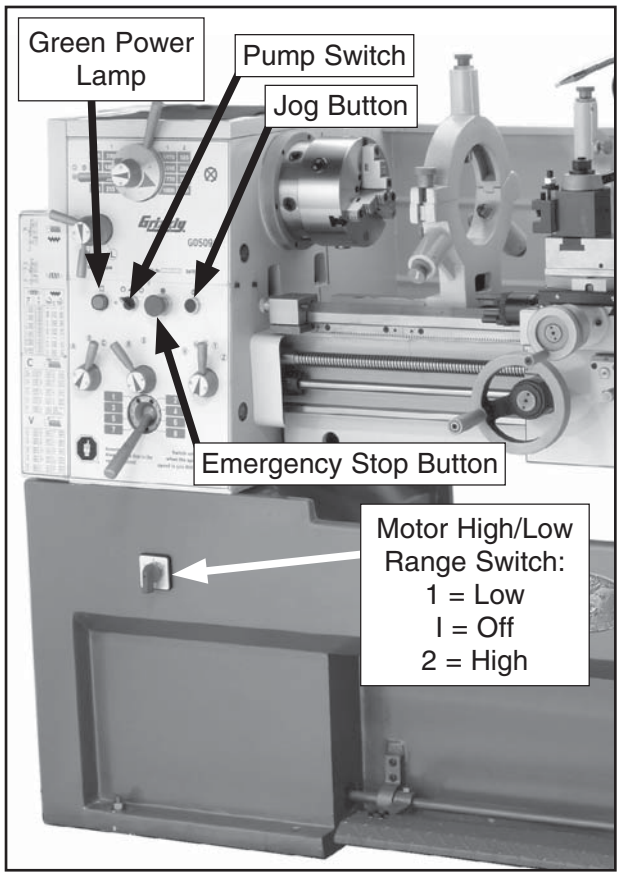



**Figure 10.** Motor High/Low range switch.

5. On the G0509G lathe, make sure the four spider bolts are either removed or they are tight in the spindle so they will not rattle out and contact the lathe end cover, causing damage when the lathe is running.

6. Make sure the pump switch is ***OFF***, and turn the motor high/low range switch (**Figure 10**) to "**1**" and the green power lamp will glow.

7. Put on safety glasses, tie back longhair, sleeves, and loose clothing.

8. Turn the work lamp ***ON*** and ***OFF.***

9. Point the coolant nozzles into the chip pan, turn the pump switch ***ON***, make sure coolant flows, and then turn the pump switch ***OFF***.

10. Push the jog button (**Figure 10**) a few times and the spindle motor will turn ***ON*** and the chuck will rotate.

**11.** Move the three headstock levers so they are positioned as shown in **Figure 11** so 330 RPM is selected.

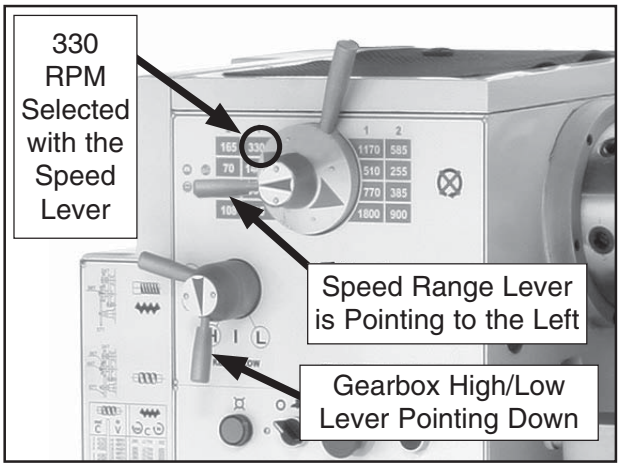



**Figure 11.** Headstock controls.

**12.** Move the spindle rotation ***ON/OFF*** lever (**Figure 9**) down until the chuck begins to turn. The top of the chuck should turn toward you.

—If the chuck is rotating away from you, then you must complete the **Changing Motor Rotation** procedure on **Page 22**, and repeat the entire **Test Run** procedure.

**13.** Push the emergency stop button.

—If the lathe does not stop, move the spindle rotation ***ON/OFF*** lever to the central position (***OFF***), and disconnect the lathe from power. Refer to **Troubleshooting** on **Page 43** for correction.

**14.** Return the spindle rotation ***ON/OFF*** lever to the central position (***OFF***), reset the emergency stop button, and restart the lathe.

**15.** Push the foot brake, and the lathe should come to a quick stop.

—If the lathe does not stop, push the emergency stop button, and disconnect the lathe from power. Refer to **Troubleshooting** on **Page 43** for correction.

**16.** Return the spindle rotation ***ON/OFF*** lever to STOP, restart the lathe, and let the lathe run for a minimum of 10 minutes at 330 RPM in both directions. DO NOT LEAVE THE LATHE RUNNING UNATTENDED!

**17.** After 10 minutes, stop the lathe, and move the headstock speed levers to select the next highest RPM. Run the lathe in both directions for 10 minutes.

**18.** Repeat for the remaining RPM ranges progressively increasing in RPM. When these steps are complete, the lathe is broken in.

**19.** Drain and refill the lubricant in the headstock with Mobil DTE® Oil or an equivalent. Refer to **Lubrication** on **Page 40** for the procedure and apron oil change interval.

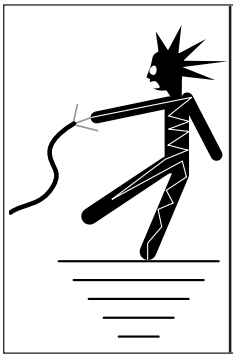
# Changing Motor Rotation

If the chuck turns away from you at the top of the chuck when the spindle lever is in the down position, motor rotation must be reversed, by swapping the position of two of the three motor power supply wires.

**To change the direction of the motor:**

1. DISCONNECT LATHE FROM POWER!

2. Remove the main electrical box cover (**Figure 12**) at the rear of the lathe, and swap **L1** and **L3** input wires (**Figure 12**).



**WARNING**

**Disconnect the lathe from power before working on wiring, and get help from an electrician if you are unsure about your wiring skills and codes. Electrocution or fire could result if this warning is ignored!**

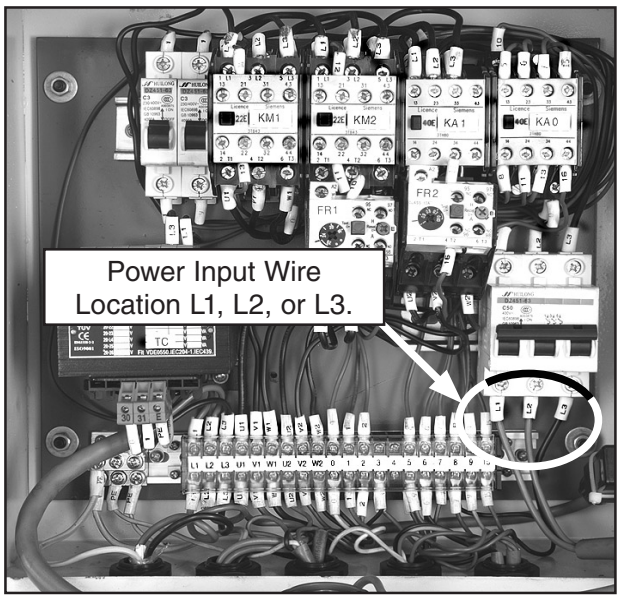



**Figure 12**. Motor power supply junction block.

# Tailstock Setup

The tailstock alignment was set at the factory with the headstock. However, we recommend that you take the time to ensure that the tailstock is aligned to your own desired tolerances.

**To align the tailstock:**

**1.** Center drill a 6" long piece of bar stock on both ends. Set it aside for use in **Step 4.**

**2.** Make a dead center by turning a shoulder to make a shank. Flip the piece over in the chuck and turn a 60° point (**Figure 13**)**.** As long as it remains in the chuck, the point of your center will be accurate to the spindle axis.

**Note:** *Keep in mind that the point will have to be refinished whenever it is removed and returned to the chuck.*

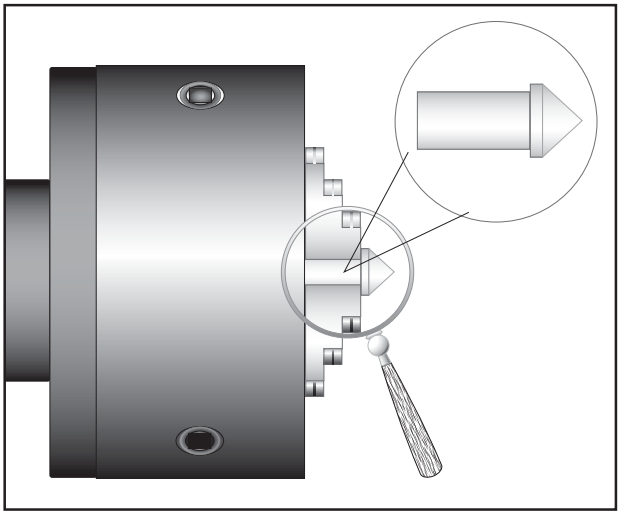


**Figure 13.** Finished dead center.

**3.** Place the dead center in your tailstock.

**4.** Attach a lathe dog to the bar stock from **Step 1** and mount it between the centers (as shown in **Figure 14**).

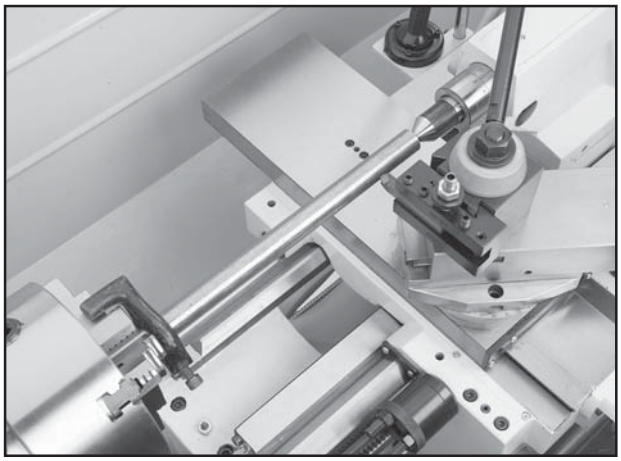


**Figure 14.** Bar stock mounted on centers.

**5.** Turn approximately 0.010" off the diameter.

**6.** Mount a dial indicator so that the plunger is on the tailstock barrel (**Figure 15**).

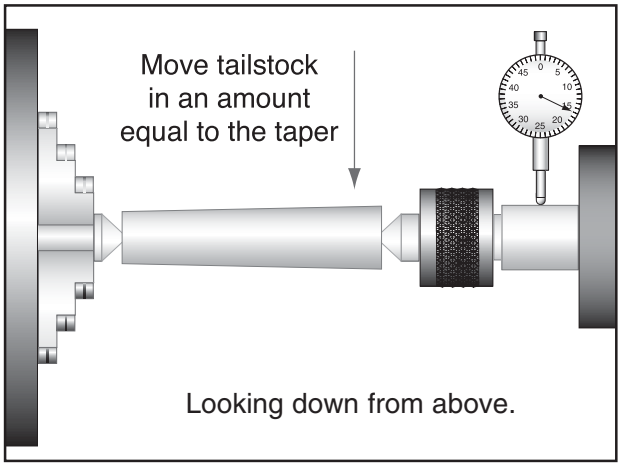



**Figure 15.** Adjusting for headstock end taper.

**7.** Measure the stock with a micrometer. If the stock is wider at the tailstock end, the tailstock needs to be moved toward the cutter the amount of the taper (**Figure 15**).

— If the stock is thinner at the tailstock end, the tailstock needs to be moved away from the operator by at least the amount of the taper (**Figure 16**).

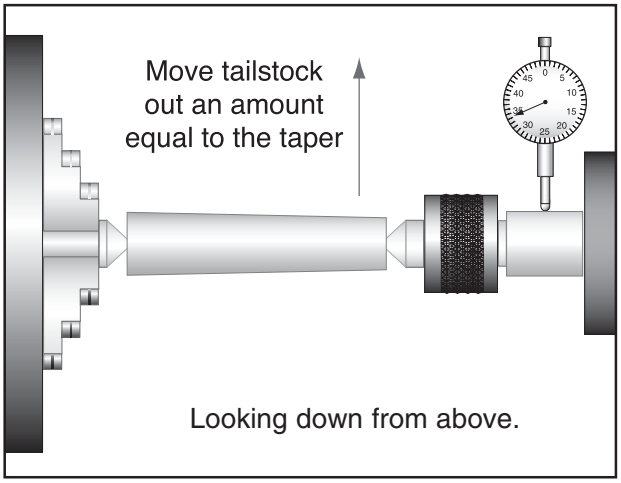



**Figure 16.** Adjusting for tailstock end taper.

## *NOTICE*

**DO NOT forget to lock the tailstock to the ways after each adjustment.**

**8.** Loosen the tailstock lock lever and adjust the tailstock offset by the amount of the taper by turning the adjustment set screw (**Figure 17**). Turn another 0.010" off of the stock and check for taper. Repeat as necessary until the desired amount of accuracy is achieved.

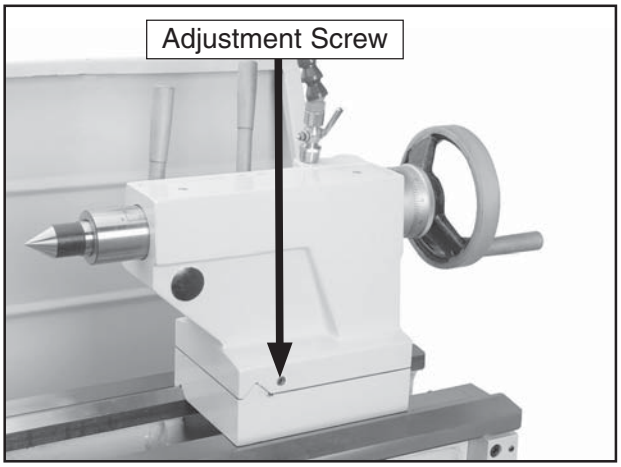



**Figure 17.** Tailstock adjustment locations.

# Gap Removal

Your lathe has a gap section below the spindle that can be removed for turning large diameter parts. This gap was installed, then ground at the factory during lathe assembly for precise fit and alignment. Factors during original lathe assembly apply additional forces to the gap; therefore, replacing the gap to the original position will be very difficult. **We don't recommend removing the gap. If removed for turning large diameter parts, reinstallation to exact factory alignment is nearly impossible. The only option is to then leave the gap out and lose carriage travel near the chuck.**

**To remove the gap:**

**1.** Remove the four cap screws from the bottom of the gap and two from the ends of the ways (see **Figure 18**).

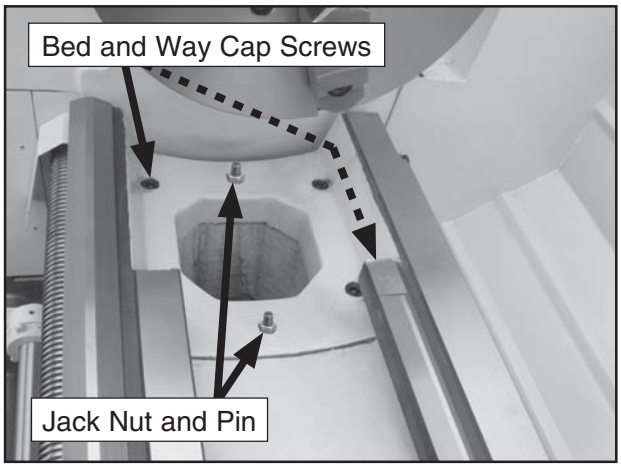



**Figure 18.** Lathe gap and pin arrangement.

**2.** Using a 14mm wrench, tighten the jack nuts to draw the pins up and out of the gap piece. **Figure 18**.

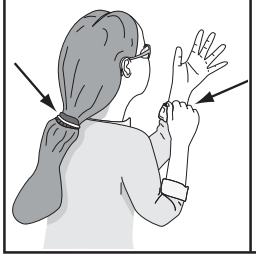
**3.** Tap the outside of the gap with a dead blow hammer to loosen, and remove the gap section.

# SECTION 4: OPERATION

## Operation Safety

**⚠WARNING**

**Damage to your eyes, lungs, and ears could result from using this machine without proper protective gear. Always wear safety glasses, a respirator, and hearing protection when operating this machine.**



**⚠WARNING**

**Loose hair and clothing could get caught in machinery and cause serious personal injury. Keep loose clothing and long hair away from moving machinery.**

***NOTICE***

**If you have never used this type of machine or equipment before, WE STRONGLY RECOMMEND that you read books, trade magazines, or get formal training before beginning any projects. Regardless of the content in this section, Grizzly Industrial will not be held liable for accidents caused by lack of training.**

***NOTICE***

**NEVER move levers while the lathe is running, and NEVER force any lever when shifting.**

***NOTICE***

**Complete the Test Run & Break-In procedure on Page 20 before using this lathe for any cutting or threading operations; otherwise, gear box damage will occur.**

# Spindle Speeds

The spindle speed or RPM is controlled by two speed control levers at the top of the headstock and the 2-speed motor switch located on the lathe base (**Figure 19**). The 2-speed motor allows for the low and high range speed options presented in columns **1** and **2** shown in **Figure 19**. Below is an example how to set the spindle to 1800 RPM.

**See Figure 19 for the following example:**

**1.** Move the 2-speed motor switch so it points to position **1**.

**Note:** *Position **"1"** on the switch activates both **#1** columns on the speed chart.*

*Position **"2"** activates both **#2** columns on the speed chart.*

*Position **"I",** the central position on the switch, cuts power to the motor.*

**2.** Move the spindle orange/blue range lever so it points to the right-hand orange-low range column number **1**.

**Note:** *The spindle orange/blue range lever must point to which ever range column your RPM is listed in.*

**3.** Move the spindle speed lever so the indicator points to 1800 at the bottom of the orange column number **1**.

**Note:** *The* spindle *speed lever must point to one of four speeds within the column in question.*

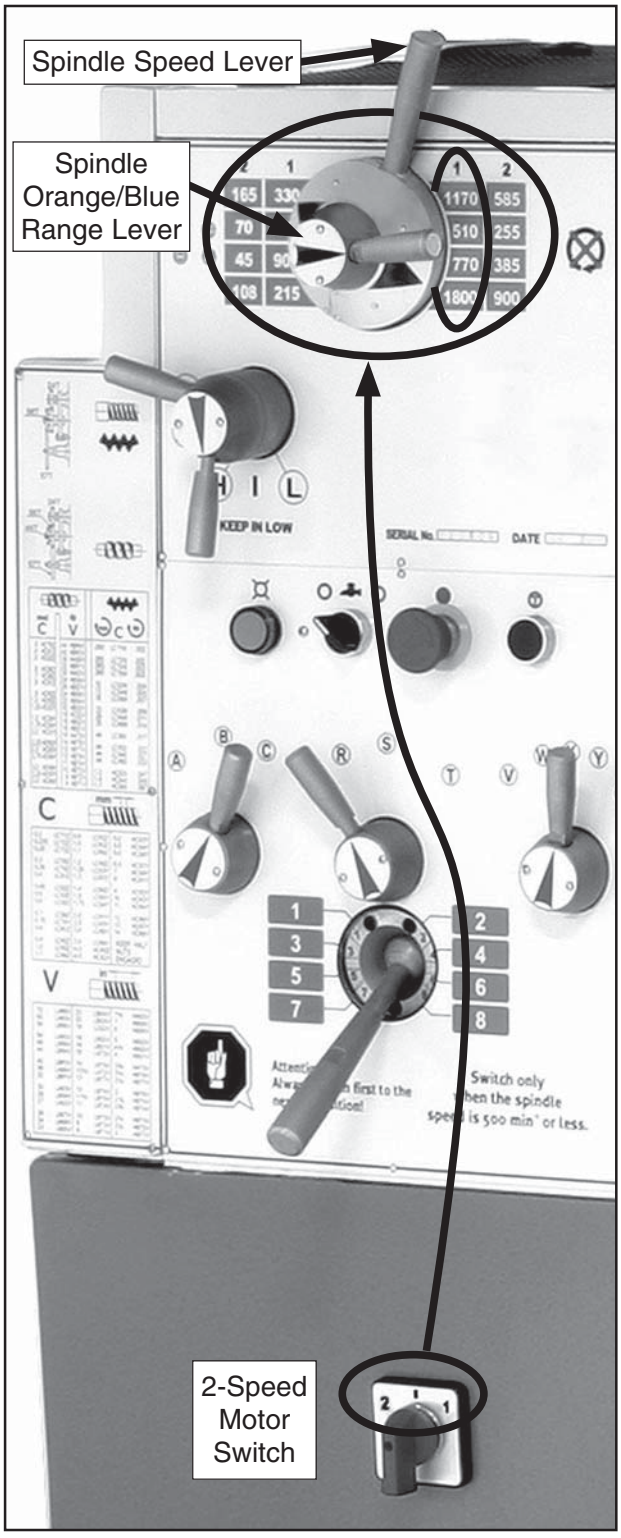



**Figure 19.** Spindle speed control.

# Gearbox Speed Range lever

## *NOTICE*

**ONLY shift the gearbox levers when spindle speed is less than 500 RPM and the gearbox speed range lever is in neutral. NEVER force a lever. If the lever will not engage, use the jog button when applicable so the teeth mesh and the lever drops into position.**

The gearbox has a series of levers used for controlling the feed rod and leadscrew feed rates in relationship with the spindle speed. Based on the threading and feed rate chart, you can shift the gearbox to accommodate an elaborate array of feed rates.

Depending on the spindle orange/blue range lever position, the gearbox speed range lever (**Figure 20**) has eight available positions for various threading and power feed operations.

—When the spindle orange/blue range lever (**Figure 20**) is pointing to the blue-spindle speed chart, the left-hand selections **1**, **3**, **5**, **7** are available.

—When the spindle orange/blue range lever (**Figure 20**) is pointing to the orange-spindle speed chart, the right-hand selections **2**, **4**, **6**, **8** are available.

***Example:***
In **Figure 20**, the spindle orange/blue range lever is pointing to the orange-spindle speed chart, and position "**8**" is selected from the available **2**, **4**, **6**, **8** positions.

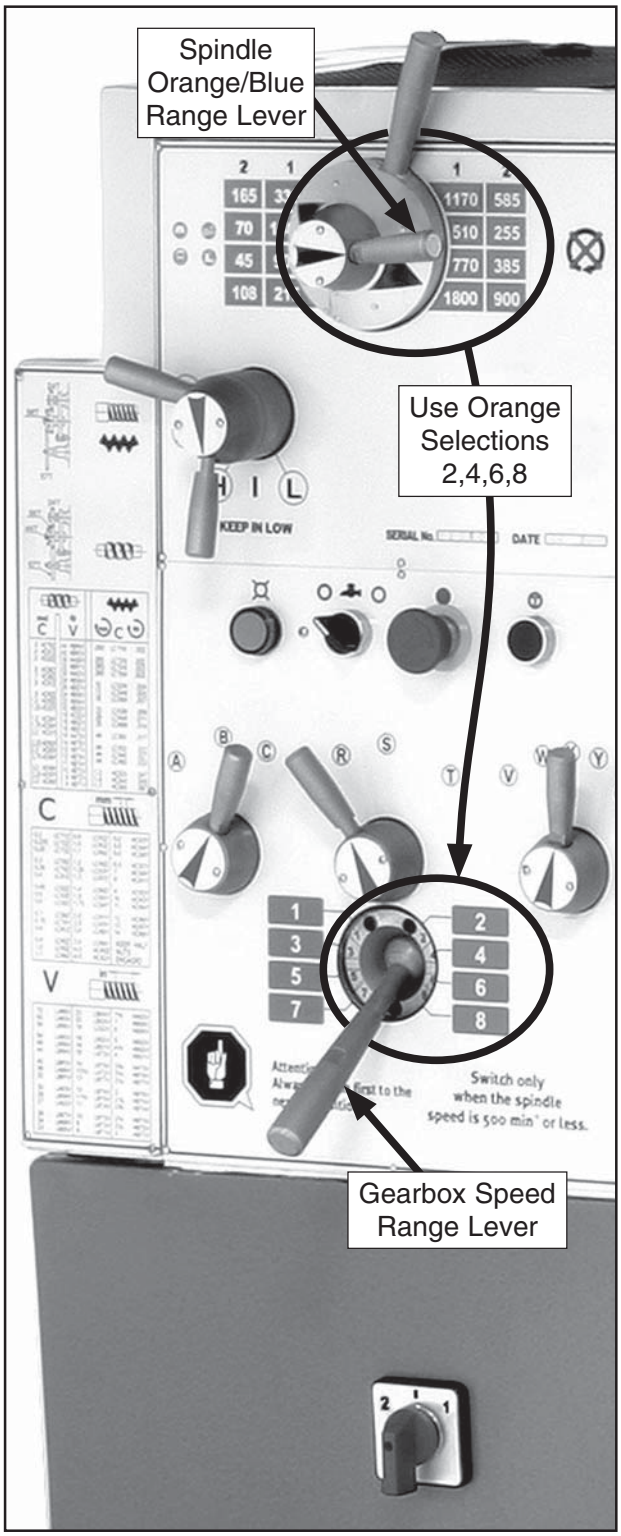

Spindle Orange/Blue Range Lever
Use Orange Selections 2,4,6,8
Gearbox Speed Range Lever
KEEP IN LOW
Switch only when the spindle speed is 500 min⁻¹ or less.

**Figure 20.** Gearbox controls.

# Feed Rod and Leadscrew

## NOTICE

**ONLY shift the gearbox levers when spindle speed is less than 500 RPM and the gearbox speed range lever is in neutral. NEVER force a lever. If the lever will not engage, use the jog button when applicable so the teeth mesh and the lever drops into position.**

The leadscrew/feed rod lever (**Figure 21**) engages and disengages the leadscrew and feed rod simultaneously. When the lever is moved up or down, the rotation of the leadscrew and feed rods are simultaneously reversed.

The three-position gearbox high/low range lever (**Figure 21**) will put the gearbox into high range "**H**", low range "**L**", or neutral "**I**".

**Note:** *Make sure to loosen the carriage lock (**Figure 28**) when apron power feed or threading are to be used. The carriage lock is used only to increase carriage stability when facing operations are in process.*

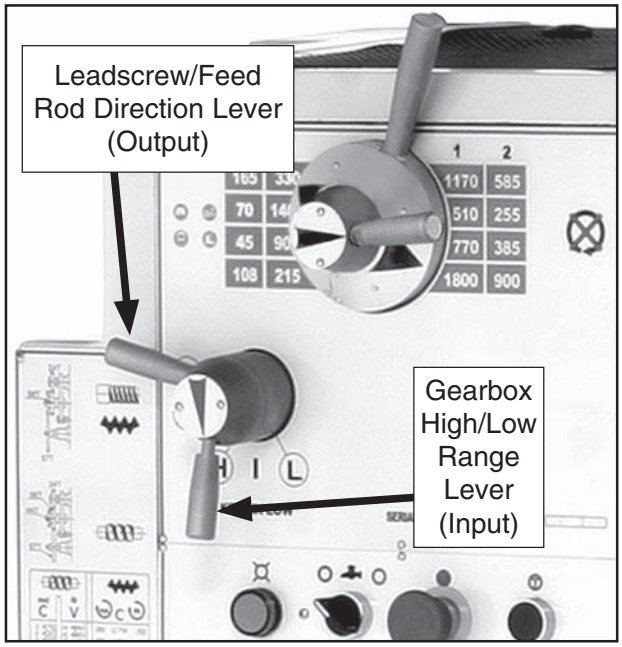



**Figure 21.** Gearbox input and output controls.

# Gearbox Ratio Levers

## NOTICE

**ONLY shift the gearbox levers when spindle speed is less than 500 RPM and the gearbox speed range lever is in neutral. NEVER force a lever. If the lever will not engage, use the jog button when applicable so the teeth mesh and the lever drops into position.**

The gearbox has a series of levers used for controlling the feed rod and leadscrew feed rates in relationship with the spindle speed.

Based on the threading and feed rate chart, you can shift the gearbox to accommodate an elaborate array of feed rates. The three gearbox range levers (**Figure 22**) have multiple lettered positions (**Figure 24**), and when moved according to the threading chart and example on the next page, you can quickly change the feed rate. The example on the next page shows the lathe setup to cut a **"3.5mm"** thread using the "**LCR8Y**" lever combination.

**Note**: *The change gear must be in the position shown in **Figure 23**.*

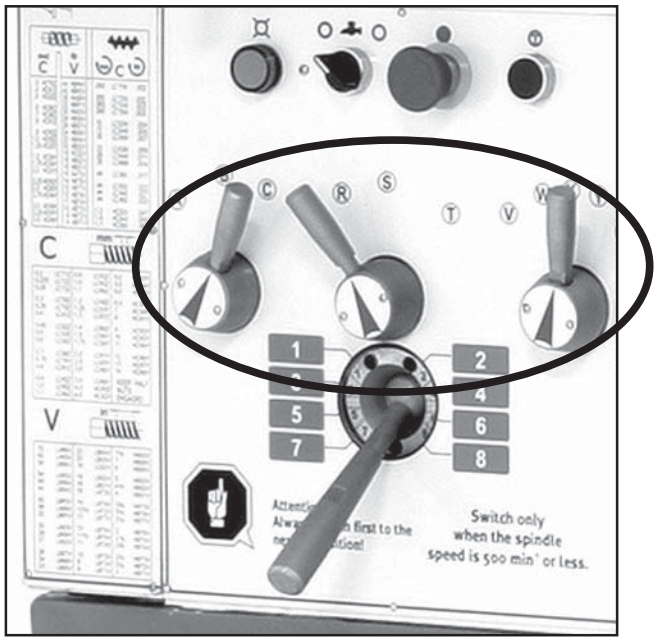



**Figure 22.** Gearbox range levers.

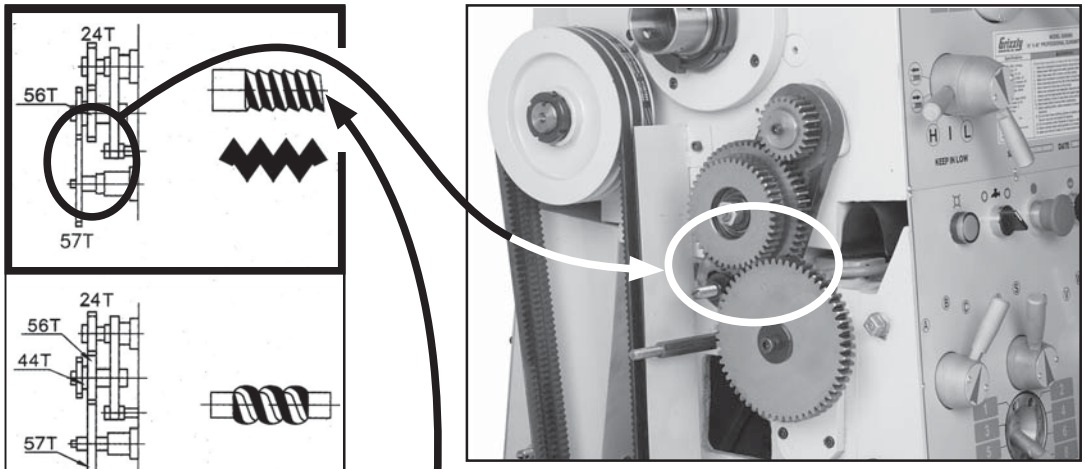



**Figure 23.** Change gear location.

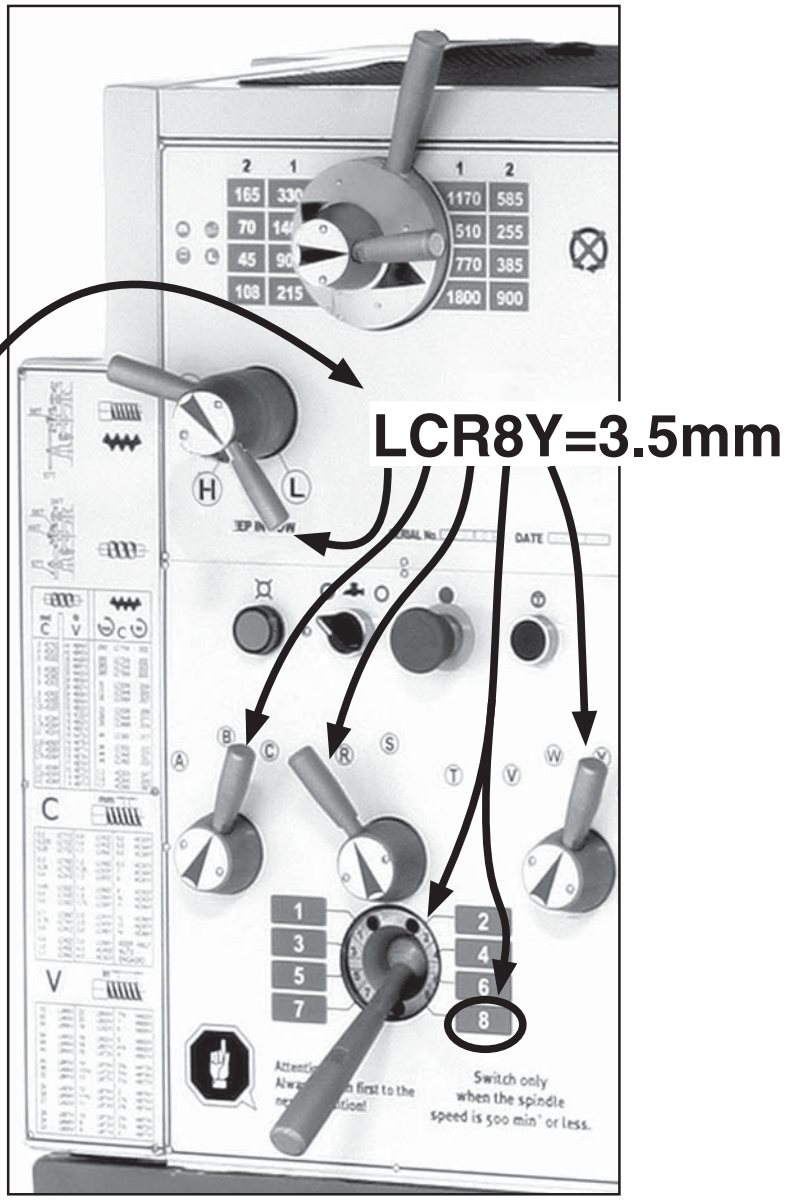



**Figure 24.** General usage.

# Manual Feed Handwheels

## Carriage Handwheel

The carriage handwheel (**Figure 25**) moves the carriage left or right along the bed. Remember the carriage lock must be loosened to allow for carriage movement during manual and power fed operations.

## Compound Slide Handwheel

The compound slide handwheel can adjust the cross slide at any angle. Angle adjustment is locked by two cap screws on the base of the top slide. The graduated dial can be rotated to read metric or inch conventions by turning it 180° degrees by holding the handwheel with one hand and turning the dial hub with the other.

## Cross Slide Handwheel

The cross slide handwheel moves the cross slide toward and away from the work. Turning the dial clockwise moves the slide toward the workpiece. The graduated dial can be rotated to read metric or inch conventions by turning it 180° degrees by holding the handwheel with one hand and turning the dial hub with the other.

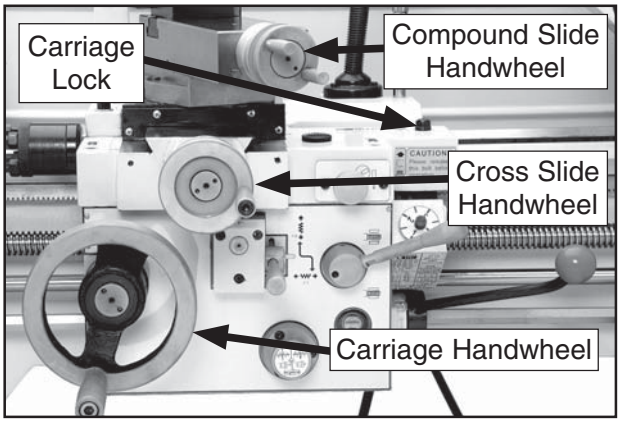



**Figure 25.** Handwheel locations.

# Power Feed Direction Knob

Your lathe can cut left or right while feeding or in and out when facing. The feed direction is controlled by the feed direction knob shown in **Figure 26**.

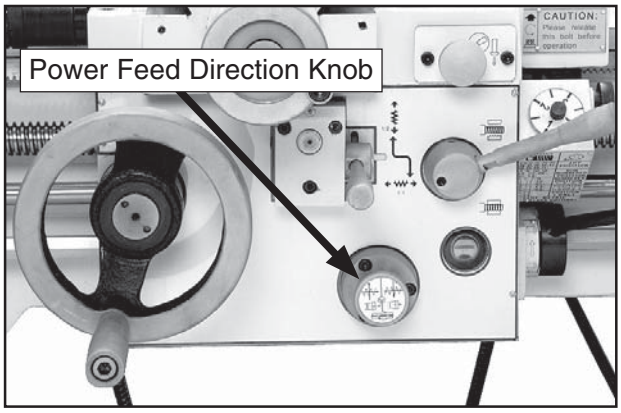



**Figure 26.** Feed direction knob.

# Tool Post & Holder

Cutting tools can be secured and removed by tightening or loosening the clamping screws in the top of the tool holder (**Figure 27**). A threaded stud is mounted in the top of the holder and has a knurled thumb wheel. Rotating the thumb wheel raises or lowers the tool holder so the cutting tool can be indexed on the workpiece. The handle on the tool post is rotated to lock and unlock the tool holder, which rests in the dovetail ways. The tool post may be rotated by loosening the nut at the top of the tool post.

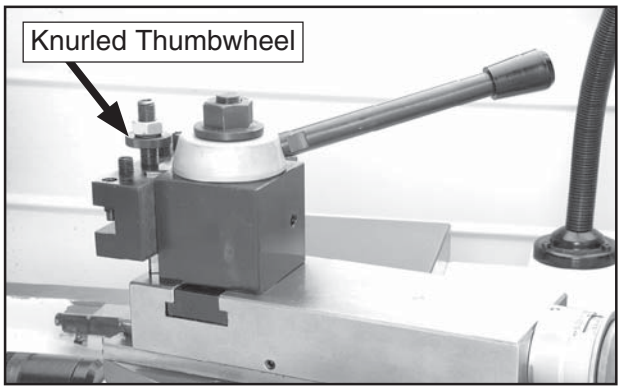



**Figure 27.** Quick change tool post.

# Half-Nut Lever and Thread Dial

The half-nut lever (**Figure 28**) clamps and releases the half-nut, which clamps around the leadscrew. The lever is only engaged while cutting threads and is not designed for general power feeding operations. For general purpose feeding, use the feed lever (**Figure 28**). This lathe uses inch lead screws, and the thread dial chart shown in **Figure 29** is only used for inch threading. For all other threading operations, the half nut lever must stay engaged until the threads are complete.

**Note:** *If the apron feed lever (**Figure 28**), is engaged, the halfnut lever is blocked from use; and when the half-nut lever is engaged, the apron feed lever is blocked from use. If both levers are engaged at the same time, apron damage will occur.*

When the thumb knob (**Figure 28**) is loosened, the thread dial housing pivots so its gear can be engaged or disengaged from the lead screw. When engaged, the dial turns with the lead screw and spindle.

**Note:** *Always loosen the carriage lock (**Figure 28**) when threading or using the apron power feed. The carriage lock is used only to increase carriage stability during facing operations.*

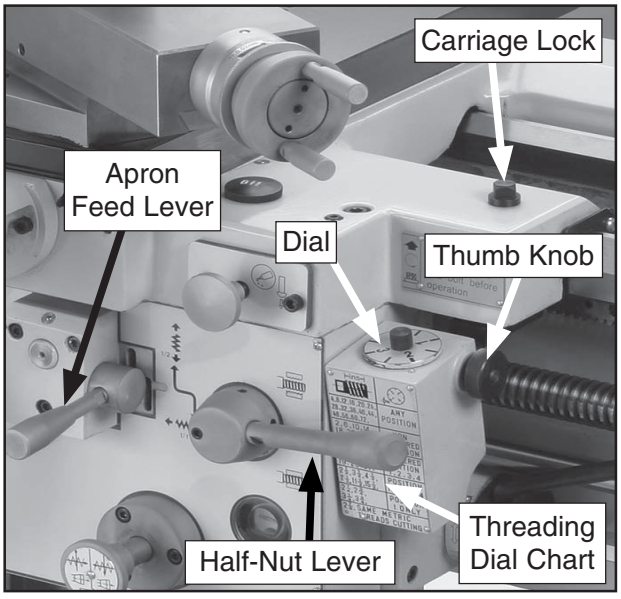



**Figure 28.** Threading dial and half-nut lever.

This column indicates when you can use the thread dial based on which thread TPI is being cut.

This column indicates which position on the thread dial you must reengage the halfnut.

| ⊢ins⊣ | |
|---|---|
| 4,8,12,16,20,24, 28,32,36,40,44, 48,56,60,72, | ANY POSITION |
| 2,6,10,14, 18,22,26, 30,54, | NON NUMBERED POSITION |
| 3,5,7,9, 11,13,15, 19,23,27, | NUMBERED POSITION 1,2,3,4 |
| $2\frac{1}{2}, 3\frac{1}{2}, 4\frac{1}{2}$, $7\frac{1}{2}, 11\frac{1}{2}, 15\frac{1}{2}$, | POSITION 1,3 OR 2.4 |
| $2\frac{1}{4}, 2\frac{3}{4}$, $3\frac{1}{4}, 3\frac{3}{4}$, | POSITION 1 ONLY |
| $2\frac{7}{8}$, SAME METRIC THREADS CUTTING | |

**Figure 29.** Threading dial chart.

# Steady Rest

The steady rest supports long, small diameter stock that otherwise could not be turned because of deflection, and can be used instead of the tailstock when facing the end of a long workpiece.

On the G0509G, the brass wear pads at the ends of the fingers have been replaced with bearings. Having bearings here maintains consistent non-wearing support throughout the cut.

**To use the steady rest:**

1. Secure the steady rest to the bedway from below with the locking plate, then snug the mounting bolt (**Figure 30**).

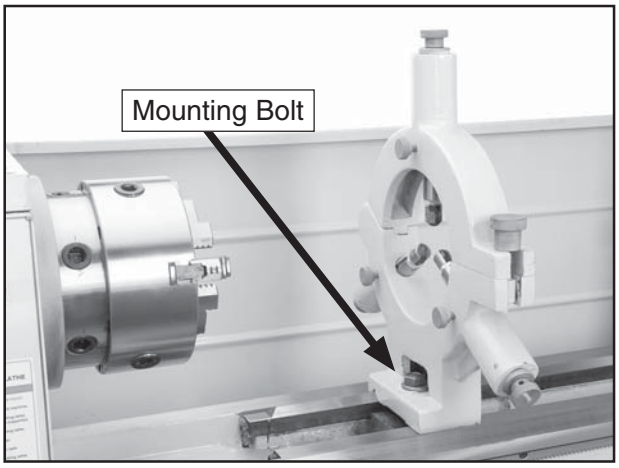



**Figure 30.** Steady rest in place.

2. Adjust the fingers until the bearings make contact and support the workpiece. Do not over tighten the fingers against the workpiece or you will cause workpiece deflection.

3. Oil the finger bearings and the rolling surfaces while in use to create non-marring workpiece support and to reduce finger wear.

# Follow Rest

The follow rest is normally used with small diameter stock to prevent the workpiece from "springing" under pressure from the turning tool.

On the G0509G, the brass wear pads at the ends of the fingers have been replaced with bearings. Having bearings here maintains consistent non-wearing support throughout the cut. The steady rest can also replace the tailstock to allow for cutting tool access at the end of your workpiece.

**To use the follow rest:**

1. Secure the follow rest to the saddle with the two cap screws (**Figure 31**).

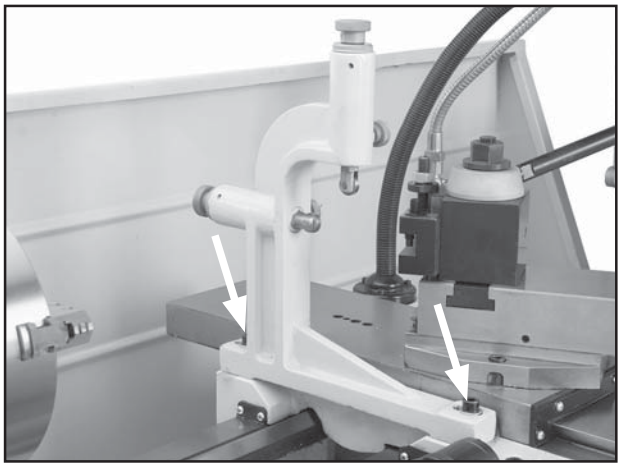


**Figure 31.** Follow rest secured to saddle.

2. Adjust the fingers until the bearings make contact and support the workpiece. Do not over tighten the fingers against the workpiece or you will cause workpiece deflection.

3. Oil the finger bearings and the rolling surfaces while in use to create non-marring workpiece support and to reduce finger wear.

# Tailstock Controls

The tailstock (**Figure 32**) serves many functions. The primary use is holding centers and drill chucks. The barrel has an MT#4 (morse taper #4) bore and is imprinted with graduations in millimeters and inches.

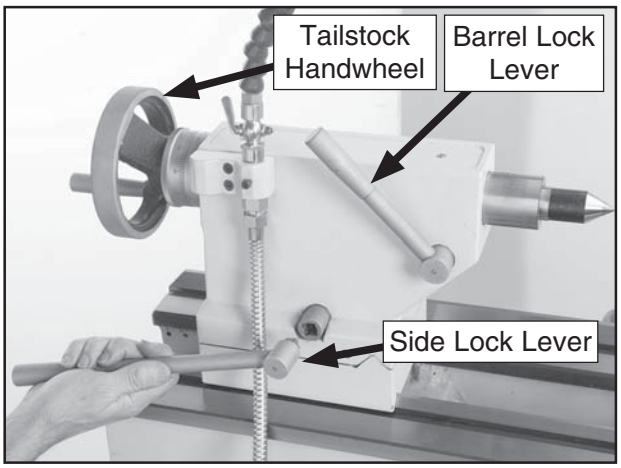



**Figure 32.** Tailstock controls.

## Tailstock Handwheel

Turning the handwheel advances or retracts the barrel in the tailstock. The graduated dial on the handwheel is adjustable.

## Barrel Lock Lever

This lever locks the tailstock barrel in place.

## Side Lock Lever & Torque Tightening (G0509G)

This removable lever locks the tailstock in place on the lathe bed. The socket that it fits into will accept a ½-inch drive torque wrench.

To repeat very accurate vertical alignment positioning, tighten the tailstock here with an inch-pound torque wrench. If you must, you can use a foot-pound torque wrench but DO NOT exceed 40 lbs/ft of torque or you may damage the ways and the tailstock. When tightening the tailstock down to the maximum torque of 40 lbs/ft, the center point will be drawn down approximately 0.006" from the normal centerline when the tailstock is resting free on the ways.

# Centers

A tailstock center supports stock that is too long to be supported by the chuck alone. The tailstock barrel and dead center have an MT#4 taper. Included with this lathe is an MT#4 to MT#6 spindle adapter sleeve. If you need to install a center in the spindle when using the face plate, you can do so by using this adapter sleeve.

Before installing a center or arbor, make sure that the mating surfaces are perfectly clean. These parts will last longer and remain accurate if properly maintained. If oil is present on the mating surfaces, the tapers will not interlock.

To install the center, insert the end of it into the tailstock bore until it seats. Once the workpiece is installed, the force of a mounted workpiece will fully seat the taper.

When using a dead center (**Figure 33**), the tailstock barrel should protrude about ½" and not more than 2¾" as indicated by the scale on the barrel.

To remove the dead center, back the tailstock barrel all the way into the tailstock casting. The dead center will pop out. Be sure to catch it when it comes out to avoid damaging the tip.

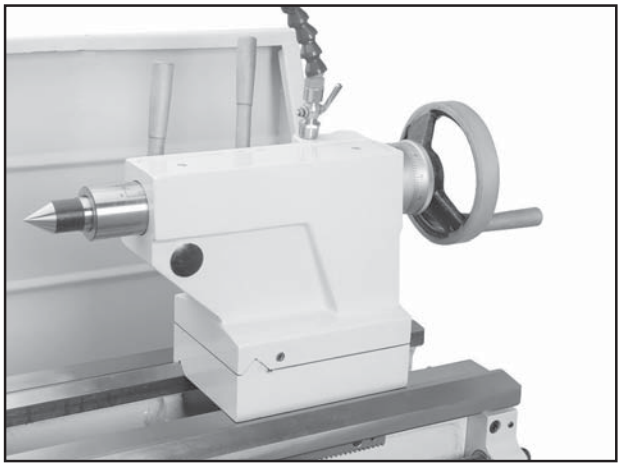


**Figure 33.** Dead center installed in tailstock.

# Spider (G0509G)

Your lathe is equipped with a set of outboard spindle supports otherwise known as a "spider" (**Figure 34**). Use the spider when a long workpiece has the potential for wobble or vibration when it extends through the outboard side of the headstock.

The tips of the spider screws have brass wear pads that hold the workpiece without causing indents in the finish.

When installed, always use the jam nuts to lock each spider screw in position. Merely tightening the spider screws against the workpiece and leaving the jam nuts loose is not safe. The spiders screws may loosen up during lathe operation and crash into the lathe end cover.

**⚠CAUTION**

**Remove the spider screws when not in use. Always disconnect the lathe from power when installing, removing, or adjusting the spider screws. Ignoring this warning can lead to personal injury or machine damage.**

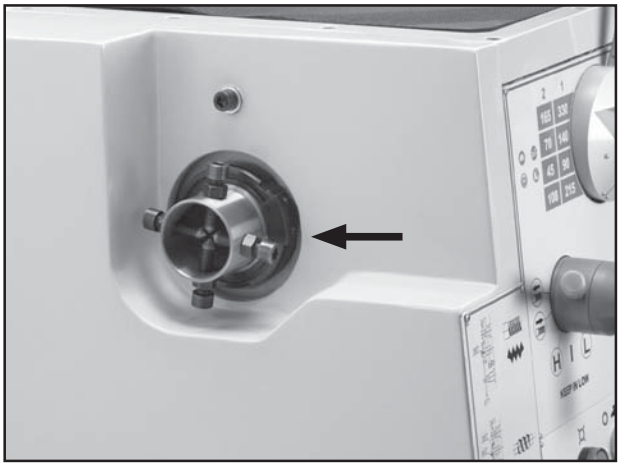


**Figure 34.** Spider.

# Manual Micrometer Stop

This lathe is equipped with a manual micrometer stop (**Figure 35**). Toward the end of the cut and as the tool approaches the shoulder of a workpiece, disengage the carriage and then manually finish the cut by hand-operating the carriage.

The micrometer stop is not an automatic carriage stop. If used as such the carriage will crash into the chuck, causing damage and possibly destroying the lathe.

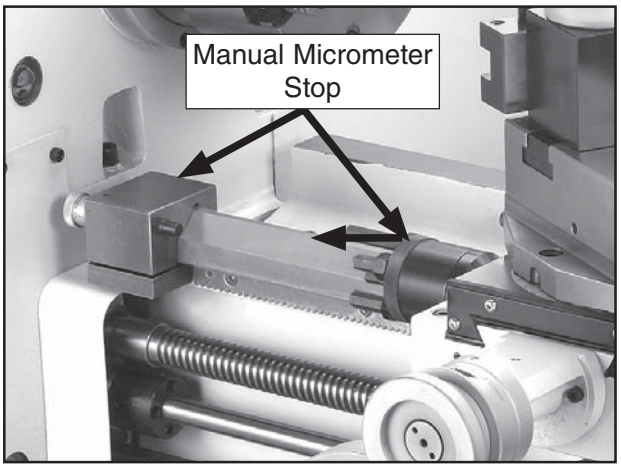



**Figure 35.** Manual micrometer stop.

# Chuck & Faceplate Mounting

This lathe is shipped with the 3-jaw chuck installed. This is a scroll-type chuck, meaning that all three jaws move in unison when adjusted.

The 4-jaw chuck, on the other hand, features independent jaws. This chuck is used for square or unevenly-shaped stock.

If either chuck cannot hold your workpiece, the cast-iron faceplate has slots for T-bolts that hold standard or custom clamping hardware. With the correct clamping hardware, this faceplate will hold non-cylindrical parts such as castings.

The chucks and faceplate have a D-6 Camlock mount. Please note that there are lines stamped into the cam and on the chuck body. A chuck key is used to turn the locking cams (**Figure 37**) to secure/unsecure the chuck/faceplate.

## ⚠WARNING

**The chuck is heavy and is awkward to handle. Always protect the ways when removing or installing a chuck, and make sure that you make a support cradle** (**Figure 36**)**. Use this cradle when installing or removing chucks. Ignoring this warning may lead to a severe crushing or amputation injury!**

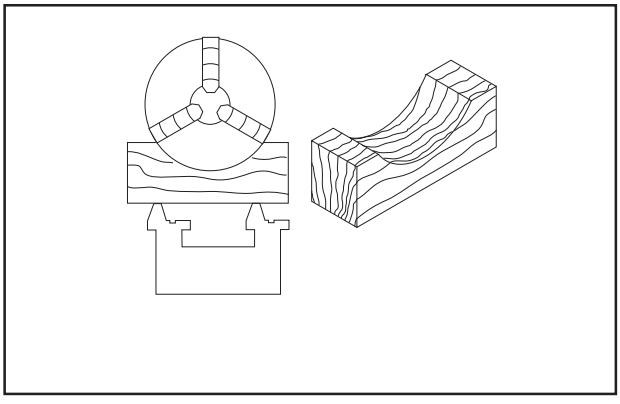


**Figure 36**. Wooden chuck support cradle.

**To remove a chuck or faceplate:**

1. DISCONNECT LATHE FROM POWER!

2. Place a piece of plywood across the lathe ways and position it just under the chuck so the ways are protected.

3. Turn a cam with the chuck key until the cam lock mark aligns with the cam release datum line shown in **Figure 37.**

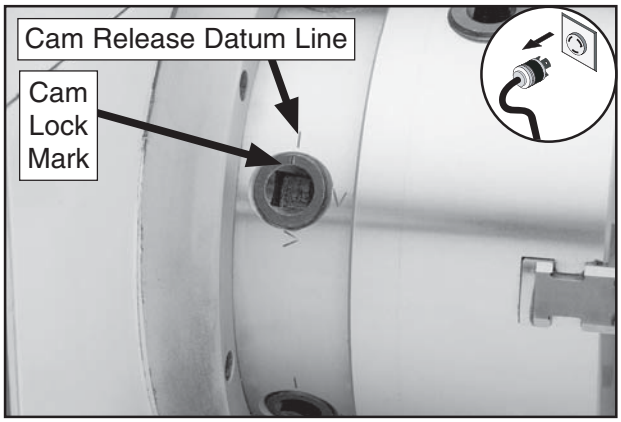



**Figure 37.** Cam and lock marks.

4. Unlock the other cams in the same manner. Make sure to support the chuck as you align the last cam. The chuck may come off at this point, so **it is important that the weight is supported by an adequate chuck cradle.**

5. Remove the chuck key.

   —If the chuck is still tight on the spindle, tap the back of the chuck with a rubber or wood mallet while supporting the bottom of the chuck.

   —If the chuck does not immediately come off, rotate the spindle approximately 60˚ and tap again. Make sure all the marks on the cams and spindle are in proper alignment.

**To install a chuck or faceplate:**

1. DISCONNECT LATHE FROM POWER!

2. Place a piece of plywood across the lathe ways and position it just under the chuck.

3. Place the chuck on the cradle.

4. Make sure the chuck taper and spindle taper mating surfaces are perfectly clean.

5. Inspect and make sure that all camlock studs are undamaged, are clean and lightly oiled, and that the camlock stud cap screws are in place and snug.

## *NOTICE*

**Never install a chuck or faceplate without having the camlock cap screws in place or fully tightened. If you ignore this notice, once installed the chuck may never be able to be removed since the camlock studs will turn with the camlocks and never release.**

6. Align the chuck-to-spindle timing marks (**Figure 39**), and slide the chuck onto the spindle.

7. Turn a camlock with the chuck key until the cam line falls between the "**V**" marks (**Figure 38**).

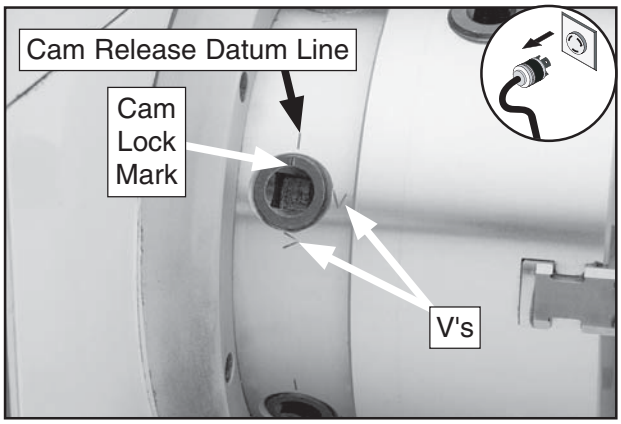



**Figure 38.** Cam and lock marks.

8. Lock the other cams in a star pattern so the chuck is drawn up evenly on all sides without any chance of misalignment.

   **Note:** *If any of the cam lock marks (**Figure 38**) do not fall between the "**V**" marks when the cam lock is tight, you must adjust the offending camlock stud as discussed in **Camlock Stud Adjustment** on **Page 37.***

9. Remove the chuck key.

# Camlock Stud Adjustment

When fitting a chuck or faceplate with camlock studs, or when mounting a new chuck or faceplate, it may be necessary to adjust the camlock studs.

In order to properly install or adjust one or more camlock studs, you must remove a stud locking cap screw, then thread the camlock stud in or out until the line on the side of the stud is flush with the top of the chuck casting (**Figure 39**). This is an initial adjustment.

When you place the chuck onto the lathe spindle, you may find that one or more camlocks do not fully point between the "**V**" marks on the chuck.

If this is the case, you will have to remove the chuck and fine-tune the camlock stud adjustment. See **Figure 39** for which direction to turn the camlock studs.

Once you have adjusted the camlock studs, install the chuck or faceplate as outlined in **To Install Chuck or Faceplate** on **Page 36**.

## *NOTICE*

**Never install a chuck or faceplate without having the camlock cap screws in place or fully tightened. If you ignore this notice, the chuck may never be able to be removed since the camlock studs will turn with the camlocks and never release.**

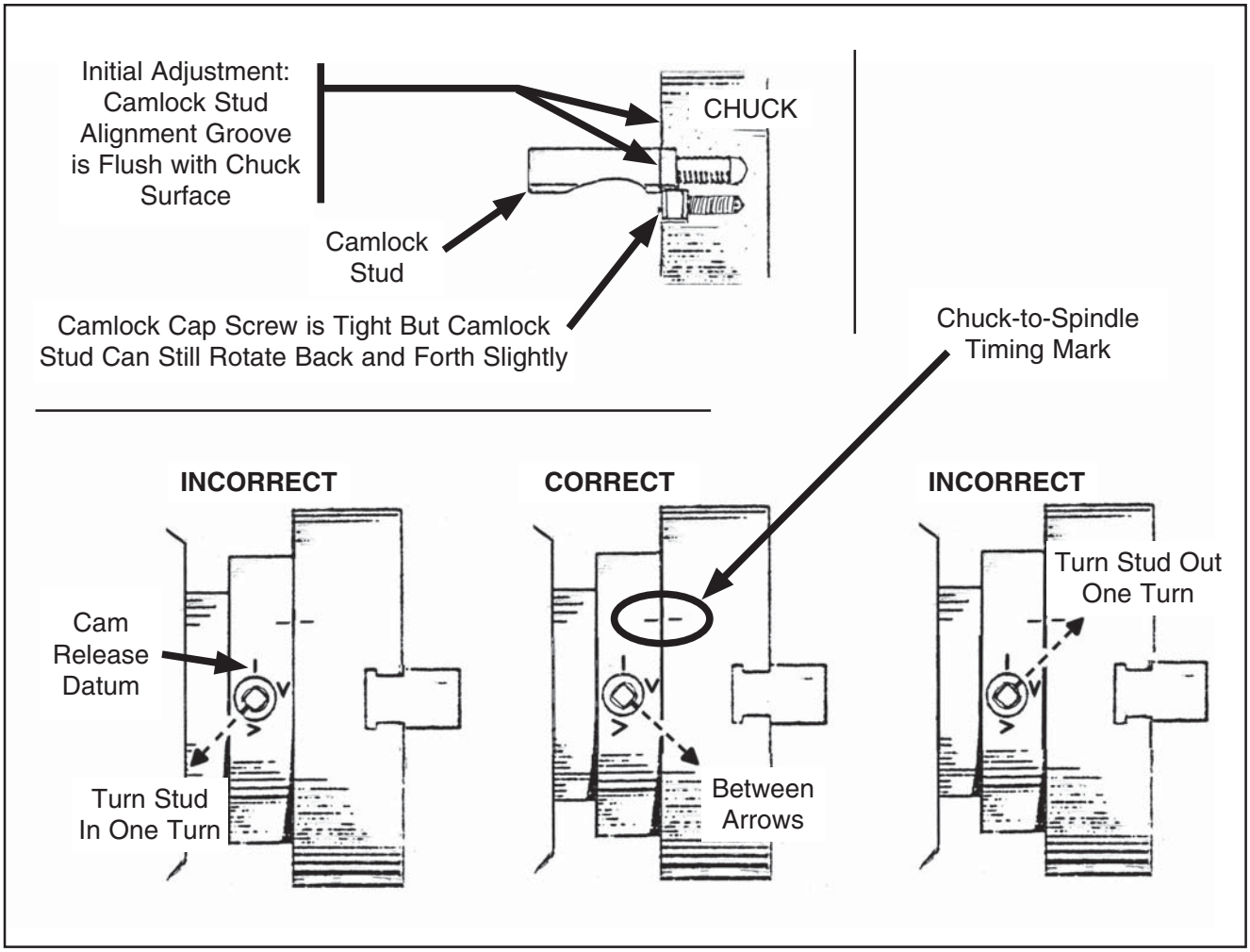

Initial Adjustment: Camlock Stud Alignment Groove is Flush with Chuck Surface
CHUCK
Camlock Stud
Camlock Cap Screw is Tight But Camlock Stud Can Still Rotate Back and Forth Slightly
Chuck-to-Spindle Timing Mark
INCORRECT
CORRECT
INCORRECT
Cam Release Datum
Turn Stud In One Turn
Between Arrows
Turn Stud Out One Turn

**Figure 39**. Camlock stud alignment.

# SECTION 5: ACCESSORIES

**H2670—HSS Square Tool Bits ½" x ½" x 4**
Our ground tool bits are M-2 HSS, making them some of the most durable tool bits around. Make your own specialized cutters in any shape using a silicon carbide grinding wheel (G8235-37) on your grinder.

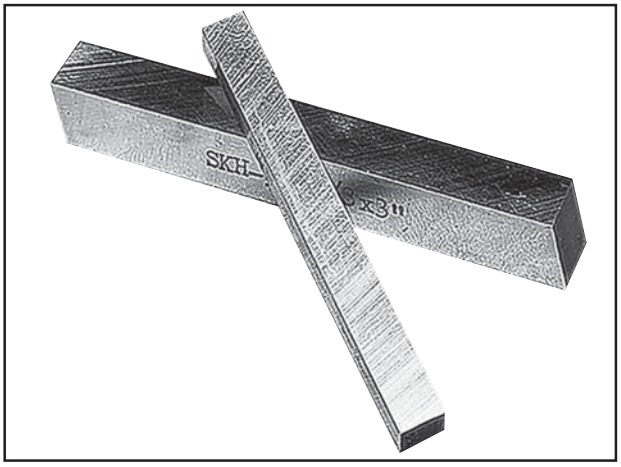



**Figure 40.** H2670 HSS Square Tool Bits.

**H5687—8-Pc. Pre-Ground Tool Bit Set**
Tired of grinding your blank high speed steel tool bits? We've done it for you! 8-pc set comes with these sharpened profiles: offset right and left hand tools with chip breaker, straight and chip breaker style threading tools, internal threading tool, parting tool, boring tool and turning tool. These tool bits are evenly hardened to better than 64C.

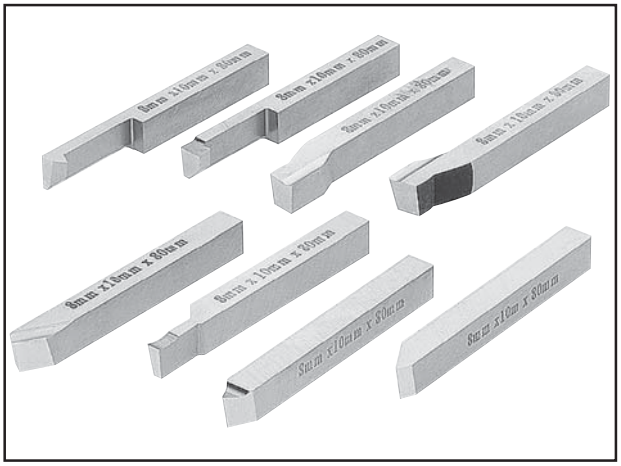


**Figure 41.** H5687 Pre-Ground Tool Bit Set.

**G9777—20-Pc. Carbide Tipped Tool Bit Set**
An exceptional value for carbide lathe tool bits! This twenty-piece set offers tremendous savings over bits sold individually, plus every type is duplicated and ready at hand when you need it. The carbide is C-6 grade for cutting steel and alloys.

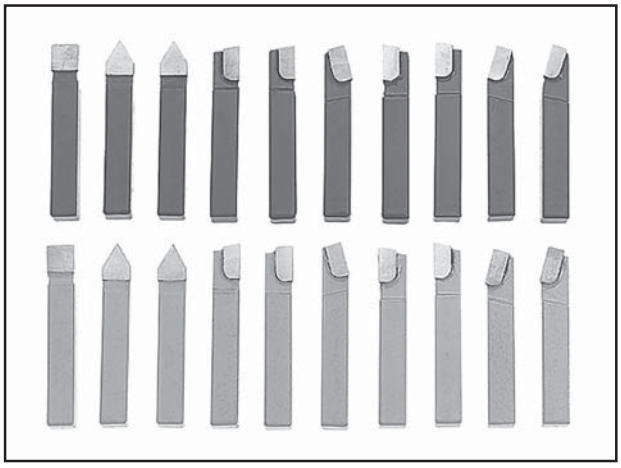


**Figure 42.** G9777 20 Pc. Carbide Tool Set.

**G7978—15 HP/12 HP Start, Phase Converter**
Add 3-phase electrical supply with this rotary phase converter! Operate single or multiple motors, transformers, and resistance loads at 100% power and 95% efficiency while saving big dollars at cheaply metered, single-phase electrical rates. For application assistance, please call our technical support group at (570) 546-9663.

**Figure 43.** Typical Rotary Phase Converter

**Call 1-800-523-4777 To Order**

## Quick Change Tool Holders

All models below are Series 300
**G5708—Boring Bar Holder, ¾" & 1" Bar**
**G5711—Parting Tool Holder, ¾" Tool**
**G5712—Knurling Tool Holder, ½"~ ¾" Tool**
**G5710—Morse Taper Holder, MT#4 Taper**
**G5707—Turning/Boring Holder, ½"~¾" Bits**
**G5706—Turning Holders, ½"~¾" Bits**

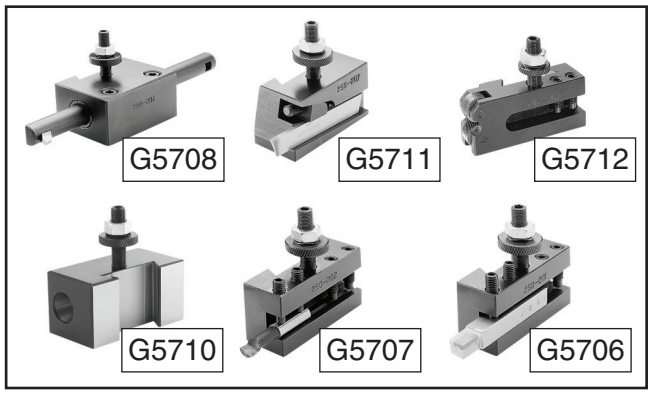



**Figure 44.** Series 300 quick change tool holders.

**H5787—MT#4 x 5" Bull Nose Rolling Center**
Built with precision sealed bearings, designed for heavy-duty use on hollow workpieces.

**Figure 45.** MT#4 bull nose rolling centers.

**G9889—MT#4 Long Nose Precision Center**
Provides critical tool clearance. Adjustable thrust bearings, 60° tip and 30° clearance relief angle.

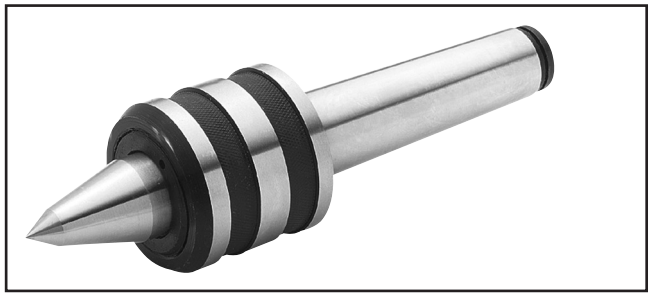


**Figure 46.** MT#4 Long Nose Center

**G7038Z—Boring Bar**
**G7040—Carbide Inserts for Steel (5 pk)**
**G7048—Carbide Inserts for Cast Iron (5 pk)**

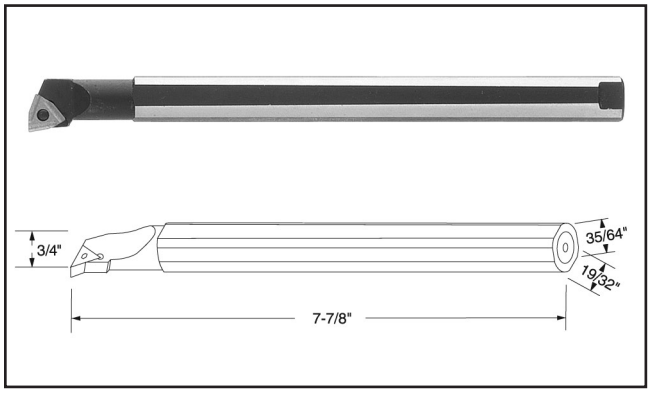



**Figure 47.** G7038Z Boring Bar.

**G7030—Threading Tool Holder**
**G7041—Carbide Inserts for Steel (5 pk)**
**G7049—Carbide Inserts for Cast Iron (5 pk)**

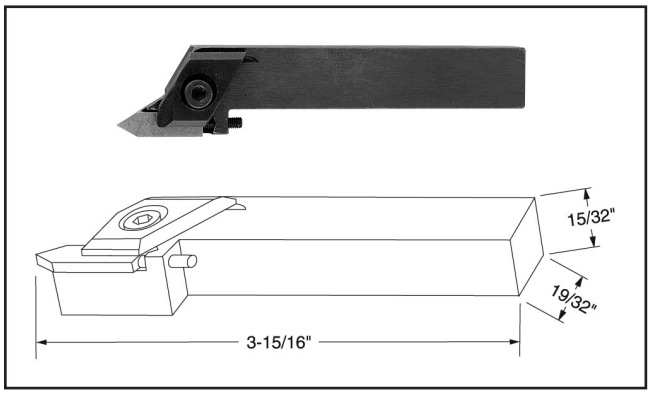



**Figure 48.** G7030 Threading Tool Holder.

**G7033—Internal Threading Tool Holder**
**G7042—Carbide Inserts for Steel (5 pk)**
**G7050—Carbide Inserts for Cast Iron (5 pk)**

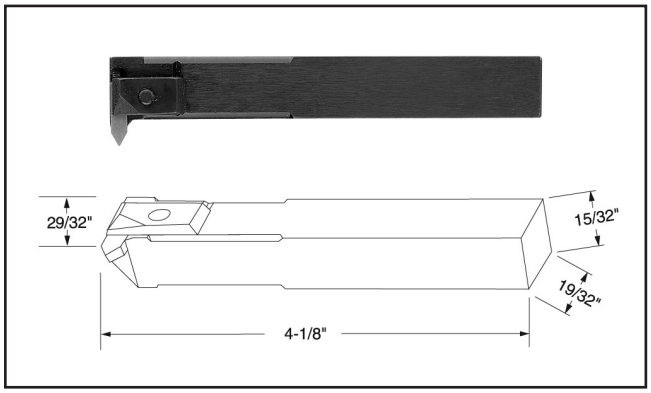



**Figure 49.** G7033 Int. Threading Tool Holder.

Call 1-800-523-4777 To Order

# SECTION 6: MAINTENANCE

## Basic Maintenance

**Check for the following conditions and repair or replace when necessary:**

- Loose mounting bolts and chuck.
- Worn switch or safety features.
- Worn or damaged power cord.
- Any other condition that could hamper the safe operation of this machine.

## Lubrication

Take the time to wipe down and oil your lathe after use. Do not leave metal chips and cutting fluid on the ways. We recommend using ISO 68 or a general motor oil unless otherwise specified.

**Saddle, Apron, Cross-Slide, and Compound Rest, see Figures 50 & 51**
Apply lubrication to the saddle through all ball oilers on the saddle, slides, and rests. Make sure the oil level in the apron is full as seen through the sight glass. Change the apron oil for the first time after one month of operation, and then at one year intervals. Use the same oil as in the headstock, which is ISO 68 or a general 10W-30W motor oil.

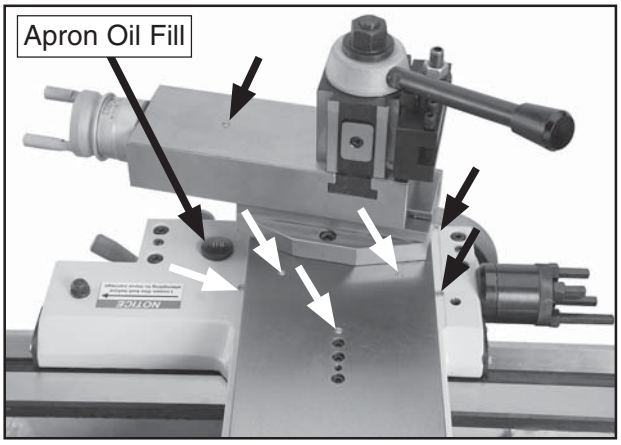



**Figure 50.** Saddle, compound rest, and cross slide ball oilers.

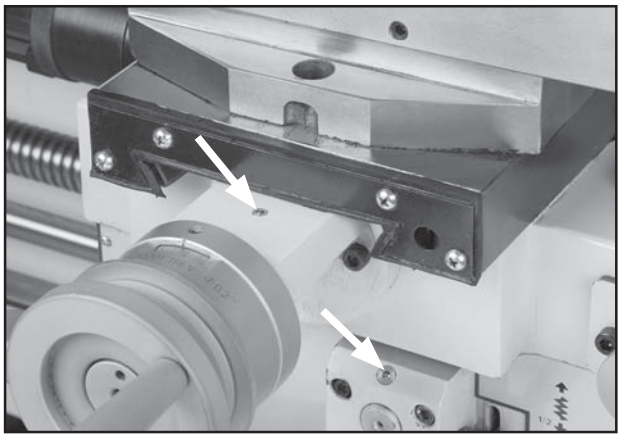


**Figure 51.** Slide ball oilers.

**Apron Oil Pump, see Figure 52**
To lubricate the saddle slide and the cross slide way guides, pull the oil pump knob out and hold it for two or three seconds, the pump will draw oil from the apron reservoir, and then push the knob in so the oil is pumped through drilled passages to the way guides. Repeat this process until the way guides are lubricated. Lubricate the guides once before and once after using the lathe. If the lathe is in an environment that has high moisture or is very dirty, increase the lubrication interval.

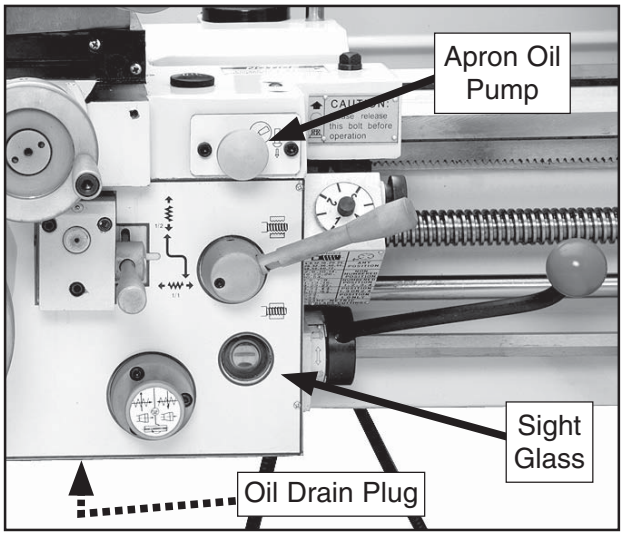



**Figure 52.** Apron Oil Pump.

**External Gearing, Headstock and Gearbox, see Figure 53**
Brush on a coat of lithium grease on the teeth of the drive gears. Avoid getting grease on the belt or pulleys when lubricating. Change the oil in the headstock after the first 2 hours of use; then, every 6 months depending on usage. Use ISO 68 or a general 10W-30W motor oil.

**Note:** *The headstock oil fill plug is located on the top of the headstock plate, labeled OIL.*

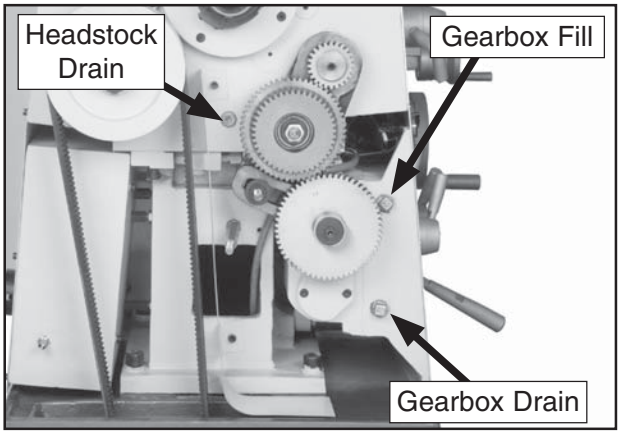



**Figure 53.** Headstock lubrication.

**Tailstock , see Figure 54**
The tailstock is fitted with two ball oilers. The tailstock barrel may be oiled directly. Apply oil each week, or after every few uses (depending on the frequency of operation). Be sure to clean the slide ways for the tailstock and lift the tailstock and squirt a few drops of oil on the ways. It is a good idea to remove the tailstock once a month and wipe the bottom thoroughly and relubricate the way tracks.

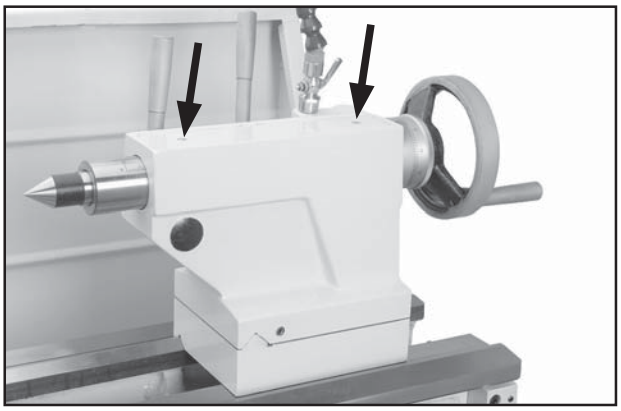


**Figure 54.** Tailstock lubrication.

**Lead Screw, Feed Rod, Slides, and Ways, see Figure 55**
Be sure to clean and lubricate the leadscrew, feed rod and switch control rod. The lead screw and feed rod have a bearing on the tail stock end support that requires one to two squirts of oil. Apply oil to the ways and slides after each use. Wipe the ways with a clean rag prior to lubrication to ensure that no grime is carried along with your lubricant into friction-sensitive areas. Applying oil to the bedways and other bare metal parts also protects the lathe from rust and pitting.

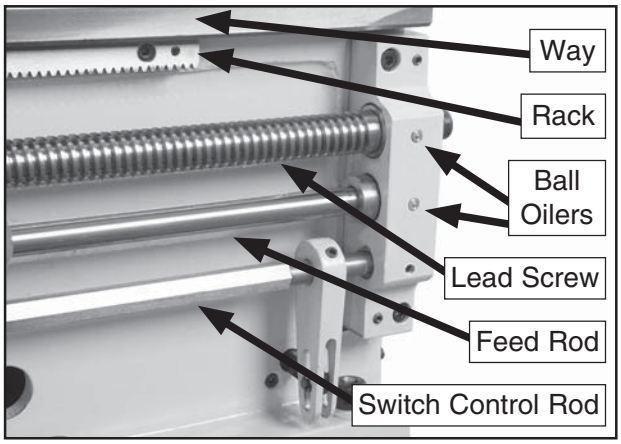



**Figure 55.** General lubrication.

# Coolant System

**⚠WARNING**

**BIOLOGICAL & POISON HAZARD! Use the correct personal protection equipment when handling cutting fluid and by follow federal, state, and fluid manufacturer requirements to properly dispose of cutting fluid.**

The coolant pump and reservoir are located in the base behind the vented cover on the tailstock end of the lathe.

The chip pan is fitted with a screen, so pay attention that it does not become clogged, fill the chip pan with coolant, and cause the pump to operate in an empty reservoir. Pump damage will cccur if it is run for a period of time without coolant.

**To perform regular maintenance on the cutting fluid system:**

1. Remove the access cover at the rear of the lathe (**Figure 56**).

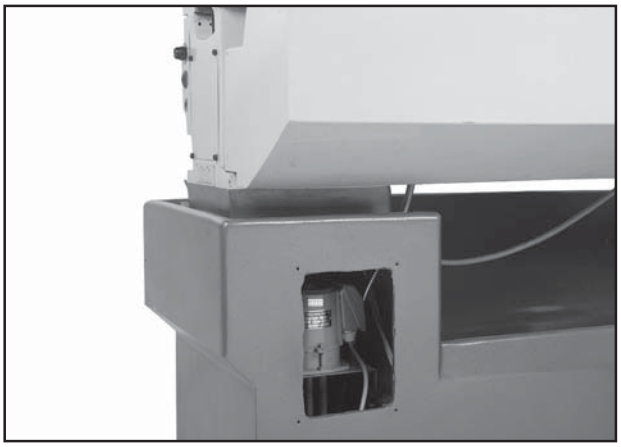


**Figure 56.** Coolant pump and reservoir.

2. Pump the old cutting fluid out of the reservoir and dispose of according to state and federal environmental laws.

3. Using a magnet, brush, and rags, clean out metal chips from the bottom of the reservoir and the screen. Flush with hot soapy water if required.

4. Refill the reservoir with applicable water-soluble cutting fluid. Closely follow the fluid manufacturer's instructions for mixing.

5. Open the valve on the coolant nozzle.

6. Turn the coolant pump ***ON*** (**Figure 57**) to prime the coolant system and to see if the coolant is cycling properly.

7. Replace the access cover.

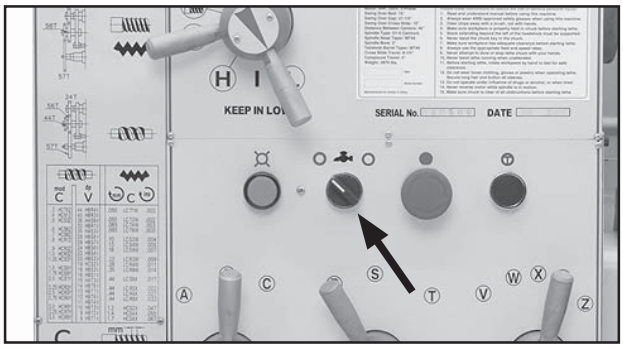



**Figure 57.** Coolant pump switch.

# SECTION 7: SERVICE

## Troubleshooting

Review the troubleshooting and procedures in this section to fix your machine if a problem develops. If you need replacement parts or you are unsure of your repair skills, then feel free to call our Technical Support at (570) 546-9663.

### Motor & Gearbox

| Symptom | Possible Cause | Possible Solution |
|---|---|---|
| Motor will not start. | 1. Main power panel switch is ***OFF***.<br>2. Emergency switch is pushed in.<br>3. Spindle rotation switch at fault.<br>4. Circuit breaker or fuse has tripped.<br>5. No voltage or open connection.<br>6. Motor direction switch is at fault.<br>7. Power switch or magnetic contactor is at fault.<br>8. Motor is at fault. | 1. Turn the main power panel switch ***ON***.<br>2. Emergency switch is pushed in.<br>3. Rotate the switch so it points to 1 or 2, or replace bad switch.<br>4. Seek an electrician to troubleshoot and repair the shop power supply.<br>5. Test circuit, replace wires and connections as required.<br>6. Replace switch.<br>7. Replace power switch or magnetic contactor.<br>8. Replace motor. |
| Fuses or circuit breakers trip open. | 1. Short circuit in line cord or plug.<br>2. Short circuit in motor or loose connections.<br>3. Incorrect fuses or circuit breakers in power supply. | 1. Inspect cord or plug for damaged insulation and shorted wires.<br>2. Inspect all connections on motor for loose or shorted terminals or worn insulation.<br>3. Install correct fuses or circuit breakers. |
| Machine is loud, belt slips, or bogs down during a cut. | 1. Excessive depth of cut.<br>2. RPM or feed rate wrong for operation.<br>3. Dull cutters.<br>4. Belt is slipping.<br>5. Belt is at fault. | 1. Decrease depth of cut.<br>2. Refer to RPM feed rate chart for appropriate rates.<br>3. Sharpen or replace cutters.<br>4. Remove grease or oil on belt or pulleys/tighten belt tensioner against low range belt.<br>5. Replace belt. |
| Gear change levers will not shift into position. | 1. Gears not aligned in headstock. | 1. Rotate spindle by hand until gear falls into place. |
| Loud, repetitious noise coming from machine at or near the motor. | 1. Pulley set screws or keys are missing or loose.<br>2. Motor fan is hitting the cover. | 1. Inspect keys and set screws. Replace or tighten if necessary.<br>2. Tighten fan or shim cover, or replace items. |
| Motor is loud when cutting. Overheats or bogs down in the cut. | 1. Excessive depth of cut or feed rate.<br>2. RPM or feed rate wrong for cutting operation.<br>3. Cutting tool is dull.<br>4. Gear setup is too tight, causing them to bind. | 1. Decrease depth of cut or feed rate.<br>2. Refer to RPM feed rate chart for appropriate rates.<br>3. Sharpen or replace the cutting tool.<br>4. Readjust the gear setup with a small amount of backlash so the gears move freely and smoothly when the chuck is rotated by hand. |

# Troubleshooting

## Operation and Work Results

| Symptom | Possible Cause | Possible Solution |
|---|---|---|
| Entire machine vibrates excessively upon startup and while running. | 1. Workpiece is unbalanced.<br>2. Worn or broken gear present.<br>3. Chuck or faceplate has become unbalanced.<br>4. Spindle bearings at fault. | 1. Reinstall workpiece so it is as centered with the spindle bore as possible.<br>2. Inspect gears and replace if necessary.<br>3. Rebalance chuck or faceplate; contact a local machine shop for help.<br>4. Tighten or replace spindle bearings. |
| Cutting tool or machine components vibrate excessively during cutting. | 1. Tool holder not tight enough.<br>2. Cutting tool sticks too far out of tool holder; lack of support.<br>3. Gibs are out of adjustment.<br>4. Dull cutting tool.<br>5. Incorrect spindle speed or feed rate. | 1. Check for debris, clean, and retighten.<br>2. Reinstall cutting tool so no more than 1/3 of the total length is sticking out of tool holder.<br>3. Tighten gib screws at affected component.<br>4. Replace or re-sharpen cutting tool.<br>5. Use the recommended spindle speed. |
| Can't remove tapered tool from tailstock quill. | 1. Quill was not retracted all the way back into the tailstock.<br>2. Debris was not removed from taper before inserting into quill. | 1. Turn the quill handwheel until it forces taper out of quill.<br>2. Always make sure that taper surfaces are clean. |
| Cross slide, compound rest, or carriage feed has sloppy operation. | 1. Gibs are out of adjustment.<br>2. Handwheel is loose.<br>3. Lead screw mechanism worn or out of adjustment. | 1. Tighten gib screw(s).<br>2. Tighten handwheel fasteners.<br>3. Tighten any loose fasteners on lead screw mechanism. |
| Cross slide, compound rest, or carriage feed handwheel is hard to move. | 1. Carriage lock is engaged.<br>2. Gibs are loaded up with shavings or grime.<br>3. Gib screws are too tight.<br>4. Backlash setting too tight (cross slide only).<br>5. Bedways are dry. | 1. Loosen the carriage lock.<br>2. Remove gibs, clean ways/dovetails, lubricate, and readjust gibs.<br>3. Loosen gib screw(s) slightly, and lubricate bedways.<br>4. Slightly loosen backlash setting by loosening the locking screw and adjusting the spanner ring at the end of the handle.<br>5. Lubricate bedways and handles. |
| Bad surface finish. | 1. Wrong RPM or feed rate.<br>2. Dull tooling or poor tool selection.<br>3. Too much play in gibs.<br>4. Tool too high. | 1. Adjust for appropriate RPM and feed rate.<br>2. Sharpen tooling or select a better tool for the intended operation.<br>3. Tighten gibs.<br>4. Lower the tool position. |
| Inaccurate turning results from one end of the workpiece to the other. | 1. Headstock and tailstock are not properly aligned with each other. | 1. Realign the tailstock to the headstock spindle bore center line. |
| Chuck jaws won't move or don't move easily. | 1. Chips lodged in the jaws. | 1. Remove jaws, clean and lubricate chuck threads, and replace jaws. |
| Carriage won't feed, or hard to move. | 1. Gears are not all engaged or broken.<br>2. Gibs are too tight.<br>3. Loose screw on the feed handle.<br>4. Lead screw shear pin has sheared. | 1. Adjust gear positions or replace.<br>2. Loosen gib screw(s) slightly.<br>3. Tighten.<br>4. Correct for cause of shear pin breakage, and replace shear pin. |
| Tailstock quill will not feed out of tailstock. | 1. Quill lock lever is tightened down. | 1. Turn lever counterclockwise. |

# Gibs

There are three main gib adjustments for the lathe. They are: the cross-slide gib, the compound slide gib, and the saddle gib.

**Cross-slide Gib, see Figure 58**
The gib on the cross-slide is adjusted by the two screws located at each end. To adjust, loosen the set screw located along the edge of the cross-slide. This set screw is provided for locking the slide for certain operations. After making the adjustments detailed below, tighten the set screw until it just touches the gib.

The gib is wedge shaped and by loosening the screw closest to the operator and then tightening the opposite screw, the slide will become looser. Conversely, loosening the screw farthest away from the operator and tightening the closer screw will tighten the gib. *Do not over tighten.*

Adjust the gib so that it creates a slight drag when the slide is in motion. Test the ease of motion with the gib slightly loose. Begin tightening the gib and test after making small adjustments. When a slight

## *NOTICE*

**When adjusting gibs, keep in mind that the goal of gib adjustment is to remove unnecessary sloppiness from the slide movement without causing them to bind. Loose gibs may cause poor finishes on the workpiece. Over tightening may cause premature wear.**

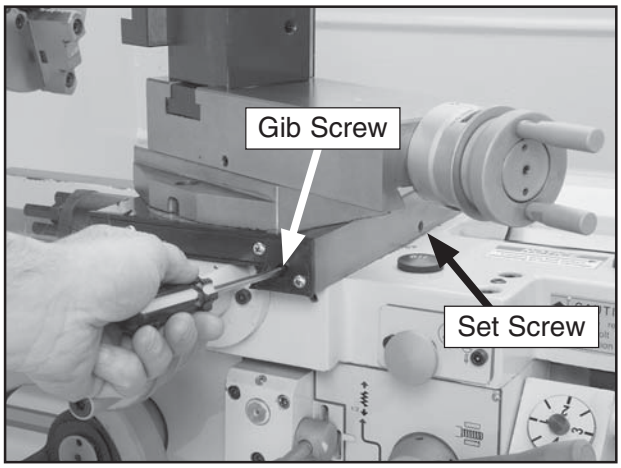



**Figure 58.** Adjusting the cross-slide gib.

**Compound Gib, see Figure 59**
The gib on the compound is adjusted by the same method as the gibs on the cross-slide, *except* the screw closest to the operator (when the compound slide is aligned with the cross slide) must be loosened and the screw furthest from the operator tightened to make the gib tighter.

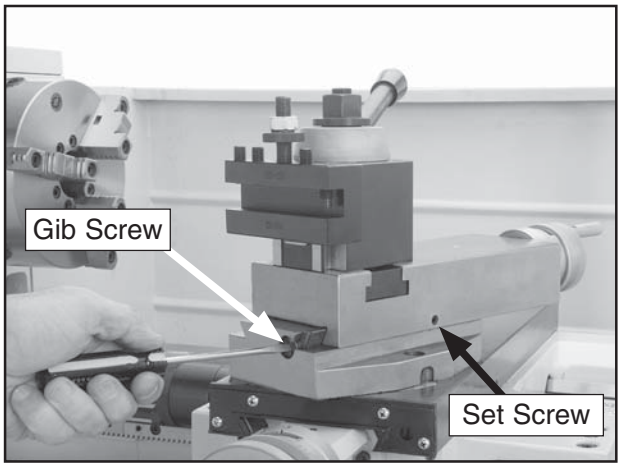



**Figure 59.** Adjusting the compound rest gib.

**Saddle Gib and Carriage Lock, see Figure 60**
Located at the back side of the saddle, the saddle gib is adjusted by the same method as the gibs on the cross-slide and compound rest. However, you must make sure that you loosen the carriage lock bolt. This bolt is used to lock the carriage in place for increased rigidity when making face cuts.

It is important that the saddle gib be properly adjusted. A loose gib will cause finish problems in a workpiece. A gib adjusted too tightly will cause premature wear.

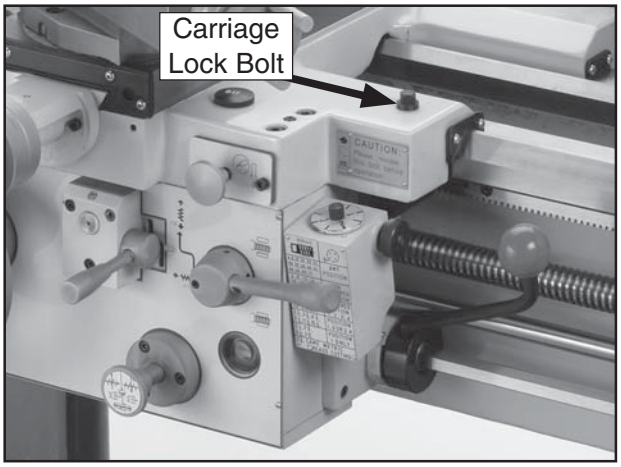



**Figure 60.** Carriage lock bolt.

# Cross Slide Leadscrew Adjustment

Backlash is the amount of play found in a lead screw. It can be found by turning the cross slide handwheel in one direction, then turning the handwheel the other direction. When the cross slide begins to move, the backlash has been taken up.

**Note:** *Avoid the temptation to overtighten the cross slide backlash screw. Overtightening will cause excessive wear to the sliding block and lead screw. Reducing backlash to less than 0.010" is impractical and reduces cross slide life.*

Backlash is adjusted by tightening or loosening the cap screws shown in **Figure 61**. These screws draw a wedge-type nut against the lead screw and main nut. If you get the gib too tight, loosen the cap screws a few turns, tap the cross slide a few times with a rubber or wooden mallet, and turn the handle slowly back and forth until the handle turns freely. To readjust the backlash, rock the handle back and forth, and tighten the screw slowly until the backlash is at approximately 0.010" as indicated on the handwheel dial.

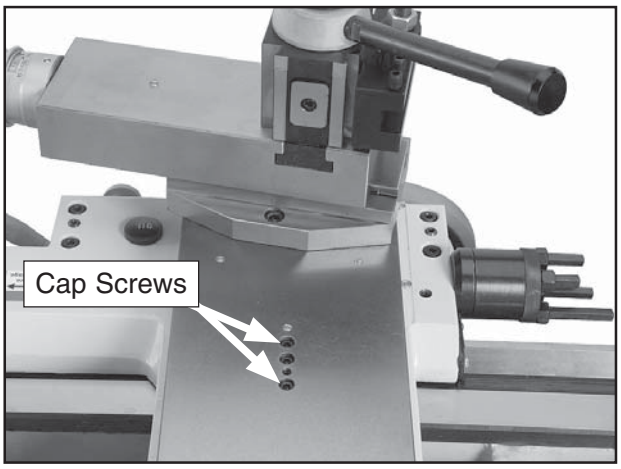



**Figure 61.** Cross slide backlash adjustment socket head cap screws.

# Leadscrew Endplay Adjustment

After a long period of time, you may find that the lead screw for threading operations may develop a bit of end play. This lathe is designed so that this play can be removed.

**To remove leadscrew end play:**

1. DISCONNECT LATHE FROM POWER.

2. Using a 3mm hex wrench, loosen the retainer set screw (**Figure 62**).

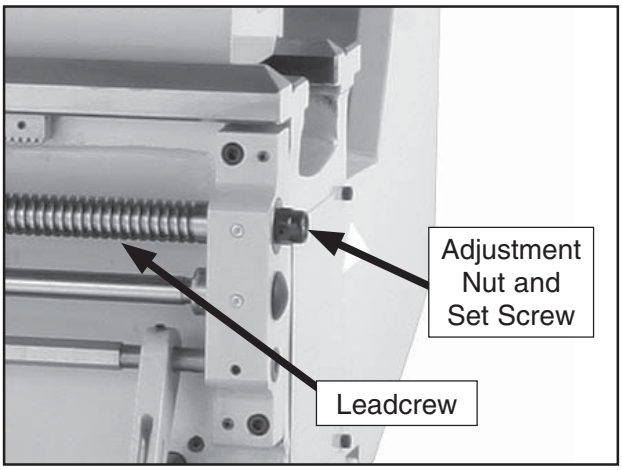



**Figure 62.** Leadscrew end play adjustment location.

3. Engage the halfnut lever and manually rotate the manual apron feed handwheel back and forth slightly to test for end play. While you are doing this, tighten the adjustment nut with a 22mm wrench until all leadscrew-endplay is removed.

4. Tighten the set screw.

# Halfnut Adjustment

To adjusted the halfnut gibs, remove the thread dial to expose the two gib screws (**Figure 63**). Your goal is to remove sloppiness in the ways without causing the half nut to bind. You will loosen the jam nuts and turn the two set screws clockwise until slight tension is felt in the set screw. The gibs will then be slightly pre-loaded. Tighten the jam nuts when finished.

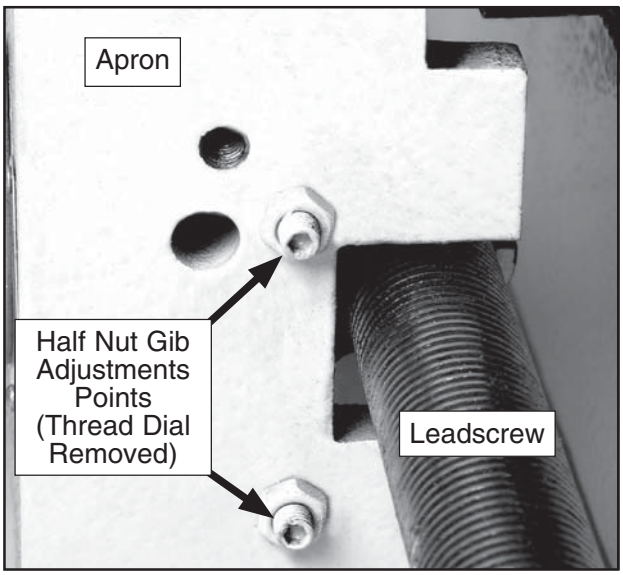



**Figure 63.** Typical halfnut gib adjustment screws.

# V-Belts

During the life of the lathe, it will be necessary to compensate for belt wear.

**To adjust or replace the V-belts on the lathe:**

1. DISCONNECT LATHE FROM POWER!
2. Open the lathe base end cover (**Figure 64**).
3. Using a wrench, adjust the belt tension hex nuts (see **Figure 64**) until there is approximately ½" belt deflection on each belt when pressed firmly in the center between the pulleys.

   **Note:** *Replace all three belts as a matched set even if one shows cracking, glazing, or fraying.*
4. Reinstall the rear cover.

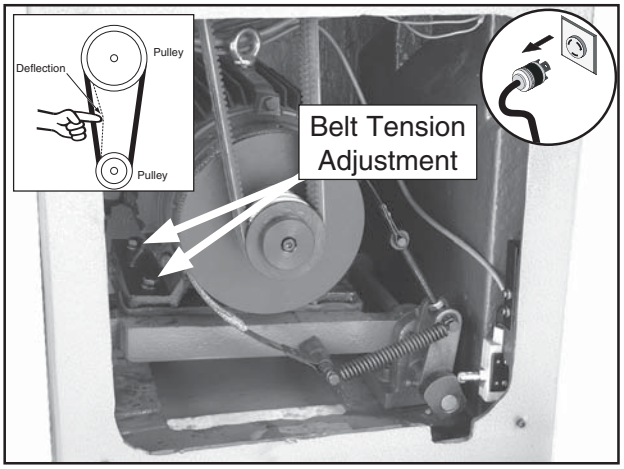



**Figure 64.** V-belt adjustment.

# Brake & Switch

After consistent lathe usage, it will be necessary to compensate for brake lining wear.

**To adjust the brake and brake switch:**

1. DISCONNECT LATHE FROM POWER!
2. Open the lathe base end cover (**Figure 64**).
3. Using a wrench, adjust the brake rod (**Figure 65**) so, when the foot pedal is pressed, the brake band firmly clamps the drum. When released, the brake band should be loose on the drum.

   **Note:** *Replace the brake band when the friction material is worn down to approximately 2mm thick.*

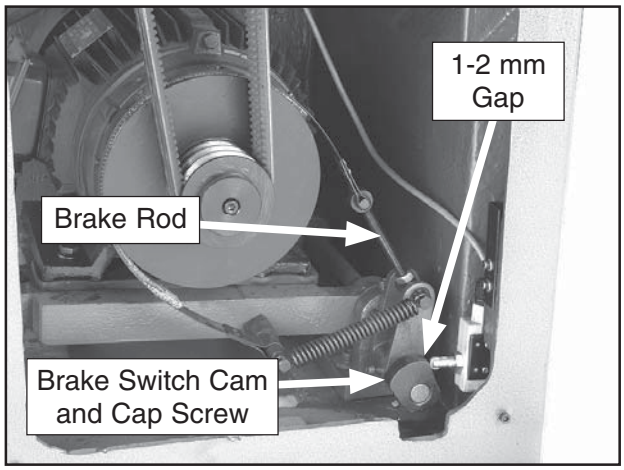



**Figure 65.** Brake band and switch.

4. Adjust the brake switch cam so when in the released position, there is 1 to 2mm gap between the cam and the brake switch push-rod roller (**Figure 65**).
5. Reinstall the safety cover and test foot brake operation.

# Bearing Preload

This lathe is shipped from the factory with the spindle bearing preload adjusted. If the spindle ever develops a bit of end-play and the workpiece finish suffers, you can adjust the bearing pre-load to remove the end-play and improve the workpiece finish.

Adjusting the bearing preload requires using a spanner wrench or a punch and hammer. You can either purchase the spanner wrench at a tool store or fabricate one, using the diagram shown below in **Figure 66**.

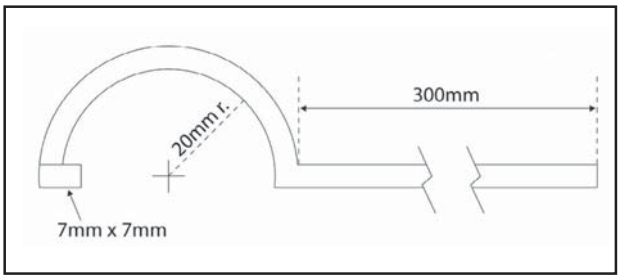



**Figure 66.** Spanner wrench diagram.

**To adjust the preload:**

1. Run the lathe for 20 minutes on high speed to bring the lathe to normal operating temperature.

2. DISCONNECT THE LATHE FROM THE POWER SOURCE!

3. Remove the chuck, shift the spindle to neutral, then remove the lathe end cover to expose the outboard spindle and spanner nut (**Figure 67**).

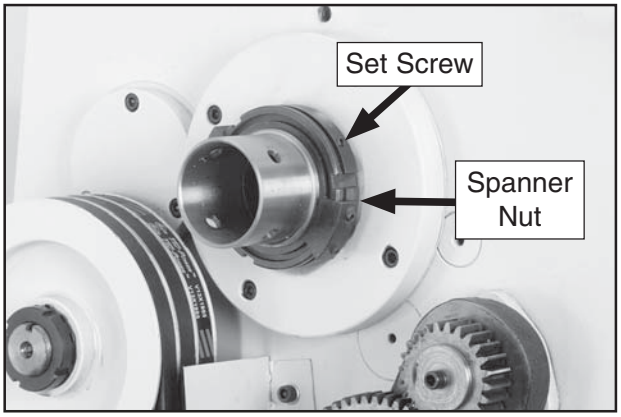



**Figure 67.** Outboard spindle/spanner nut.

4. Using a 3mm hex wrench, remove the spanner nut locking set screw (**Figure 67**).

5. Place the chuck key in the cam-lock socket to keep the spindle from rotating.

6. Using a spanner wrench, or hammer-and-punch, loosen the spanner lock nut (**Figure 68**) counterclockwise three turns.

   **Note:** *You may have to tap on the outboard spindle tube as explained in **Step 13** to help unload the spindle and break the spanner nut loose.*

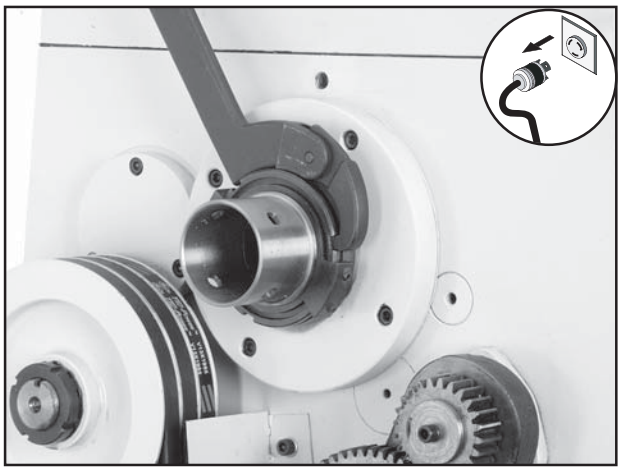


**Figure 68.** Loosening outboard spanner nut.

7. Place a dial indicator on the cross slide and move the carriage toward the headstock until the contact point of the indicator touches the spindle face (**Figure 69**).

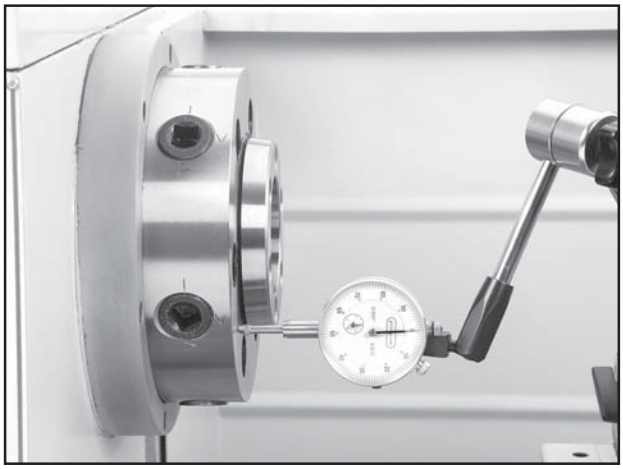


**Figure 69.** Dial indicator setup.

8. Move the carriage an additional 0.100" toward the headstock.

9. Using a 5mm hex wrench, remove the headstock lid to expose the headstock gears.

10. Remove the preload spanner nut set screws (**Figure 70**) with a 3mm hex wrench.

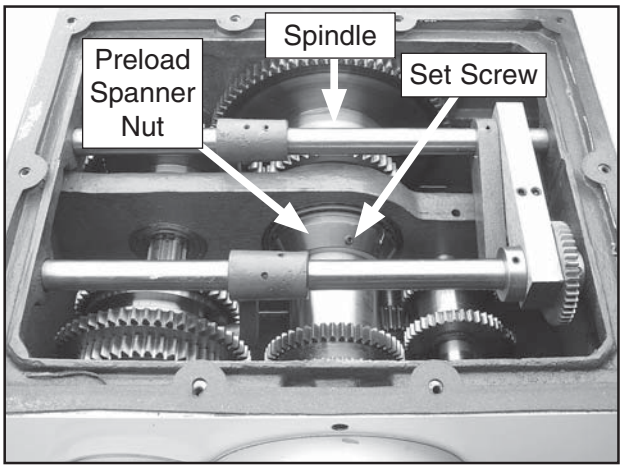



**Figure 70.** Preload spanner nut.

11. Place the chuck key in the cam-lock socket and keep the spindle from rotating.

12. Using a spanner wrench, or hammer-and-punch, loosen the preload spanner nut (**Figure 70**) counterclockwise 1 turn.

13. Place a wooden block over the outboard end of the spindle, hit the block soundly with a metal or heavy dead blow hammer (**Figure 71**). Your goal is to slide the spindle forward just enough to introduce spindle end-play that you can feel by hand.

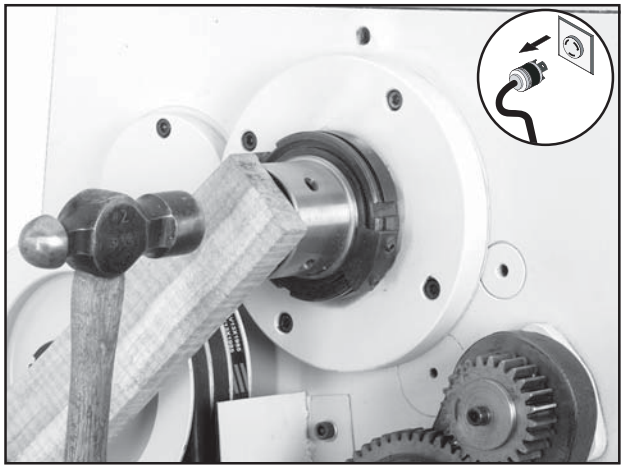


**Figure 71.** Introducing detectable end-play.

Since it can take great effort to turn the preload spanner nut, you may find it difficult to know if you have gone past the zero end-play point or not. You may find it easiest to have someone watch the dial for you while you tighten the inner spanner nut. If you think you may have gone past the zero end-play point, take the time to unload the bearings as described earlier, then re-tighten the inner spanner nut until you know you have reached the correct setting.

When you are confident that you have adjusted the preload spanner nut until zero spindle end-play and but preload exists, you now must move the spanner nut inward and additional 0.001" to set the preload.

14. To set the preload, rotate the spanner nut an additional 0.16" as shown in **Figure 72**.

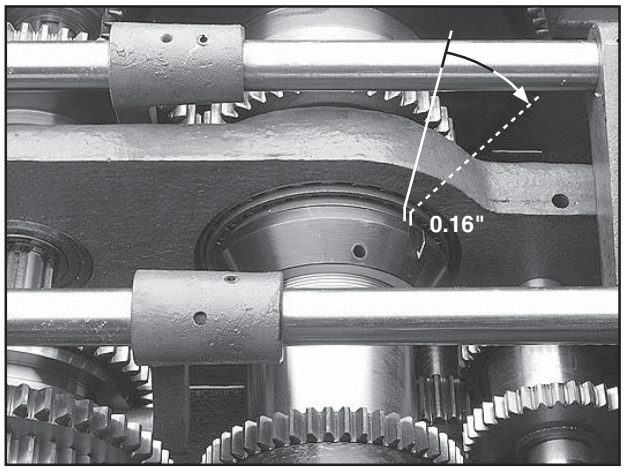



**Figure 72.** Preload spanner nut adjustment.

15. Reinstall the setscrews in the preload spanner nut.

16. Position the gasket correctly, and re-install the headstock cover.

17. Tighten the outboard spindle spanner nut until it is snug and reinstall the locking setscrew.

18. Reinstall the lathe end cover, and make sure the counterweights (**Figure 73**) do not rub on the cover when the lathe is turned on.

**To confirm that the bearings are correctly preloaded:**

1. Make sure all safety precautions have been taken and setup steps are complete to make the lathe fully operational.

2. Install the chuck and tighten the jaws.

3. Set the spindle speed to its highest setting.

4. Connect the lathe to power and turn the lathe spindle ***ON***.

5. Let the lathe run for 20 minutes.

6. Turn the spindle ***OFF***, disconnect lathe from power, and check the temperature of the spindle.

   —If the spindle nose is hotter than you can comfortably keep your hand on, the preload is too tight and you must repeat the bearing preload adjustment procedure.

   —If the spindle nose is slightly warm to the touch, you have correct bearing preload. Now complete **Spindle Balancing** procedure.

# Spindle Balancing

After the spindle has been broken in, or if the lathe has been used for a considerable amount of time, you should adjust the spindle weights to minimize spindle vibration.

**To minimize spindle vibration:**

1. Run the lathe for five minutes on the fastest RPM.

2. DISCONNECT LATHE FROM POWER!

3. Open the side cover, loosen the counter weight set screws (**Figure 73**), and reposition one or both counterweights to a new position around the circumference of the spanner nut.

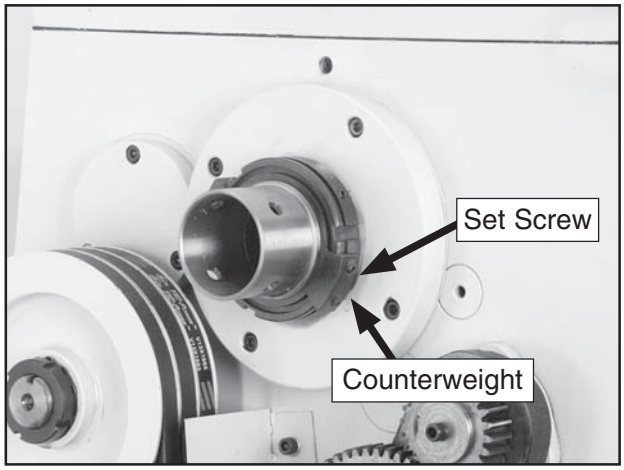



**Figure 73**. Spindle counterweights.

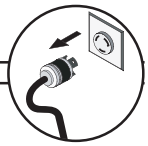
4. Close the side cover, reconnect to power, restart the lathe, and run at 900 RPM.

5. Place your hand on the headstock cover and feel for harmonic vibration.

6. Repeat **Steps 2–5** until vibration is reduced to a minimum.

7. Now, repeat **Steps 2–5** at 1800 RPM until vibration is reduced to a minimum.

# Main Electrical Box



**Note:** *See **Pages 56** and **57** for wire connections.*

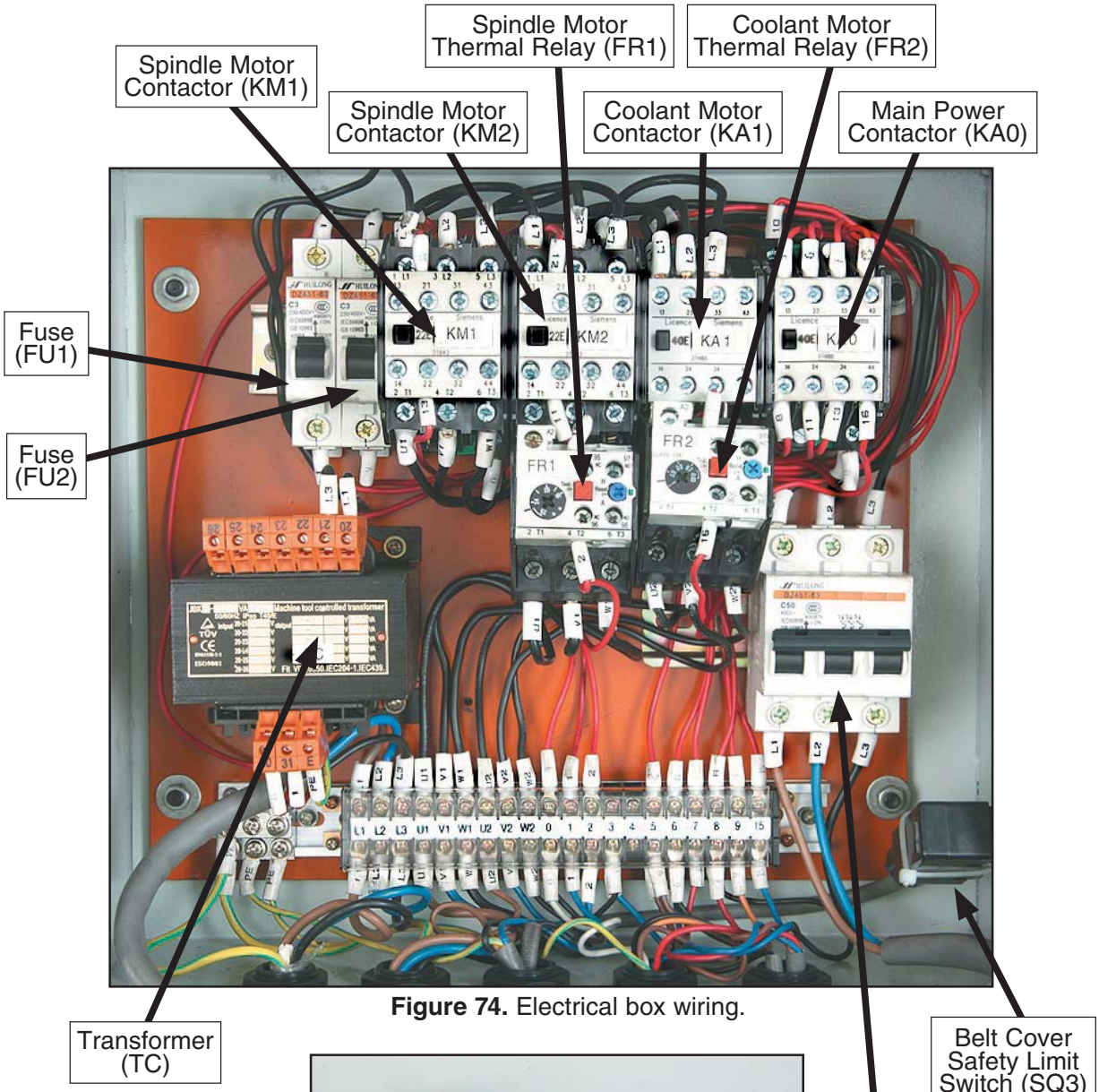



**Figure 74.** Electrical box wiring.

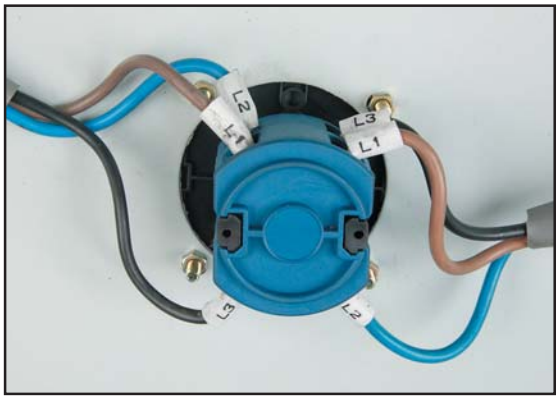


**Figure 75.** Main Power switch (S) connections.

# Motors & Switches

**Note:** *See **Pages 56** and **57** for wire connections.*

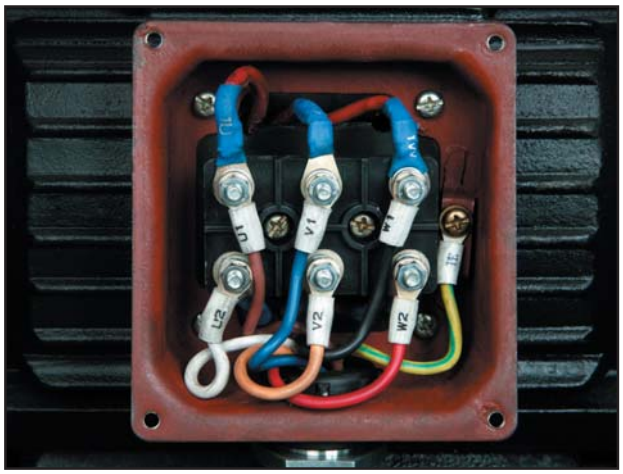



**Figure 76.** Spindle motor (M1) connections.

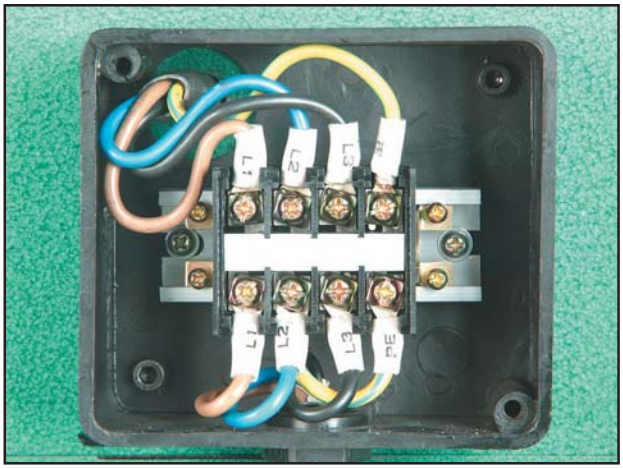



**Figure 79.** Power-in junction box connections.

**Figure 77.** Pump motor (M2) connections.

**Figure 80.** Brake switch (SQ1).

**Figure 78.** Belt cover safety switch (SQ3).

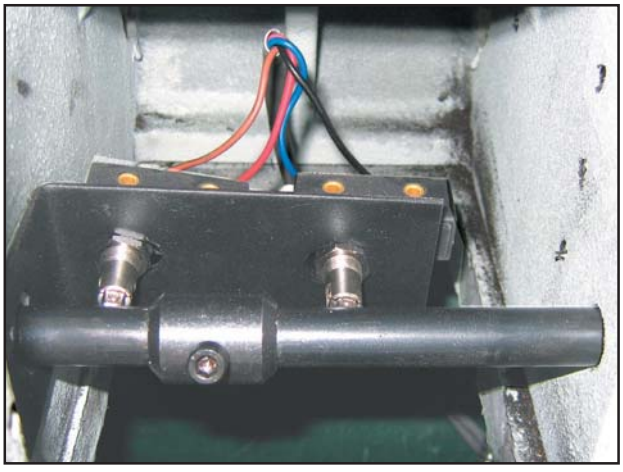


**Figure 81.** Spindle motor rotation switches (SQ4, SQ5).

# Control Panel & Switches

**Note:** *See **Pages 56** and **57** for wire connections.*

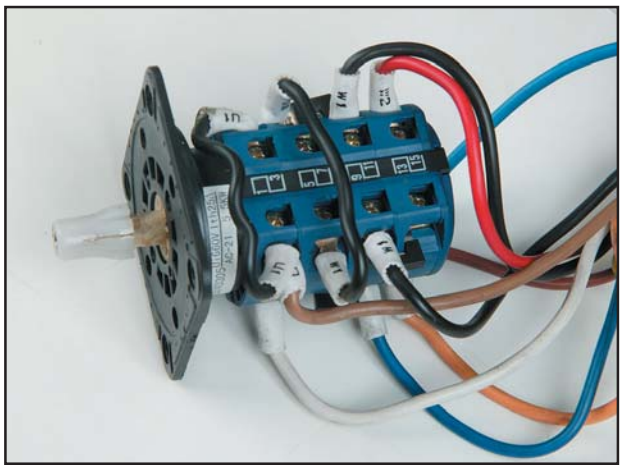


**Figure 82.** Motor speed switch (SA), side 1.

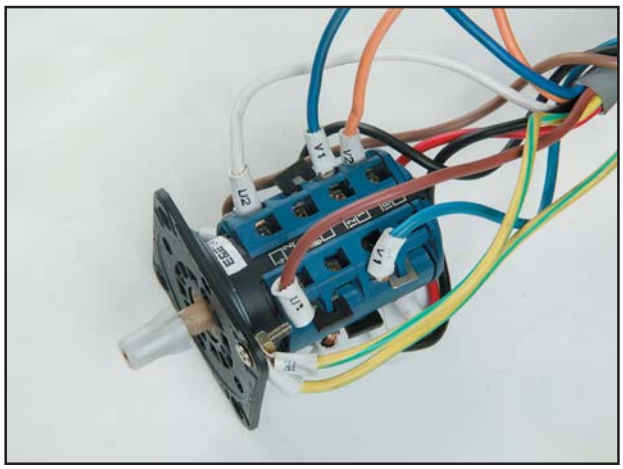


**Figure 83.** Motor speed switch (SA), side 2.

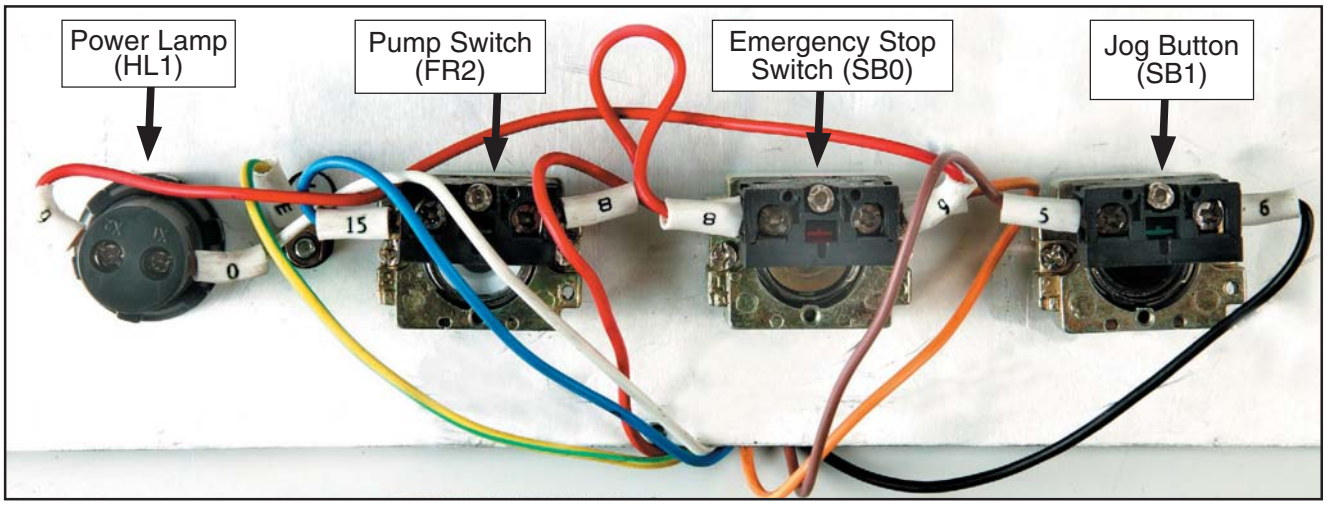



**Figure 84.** Control panel).

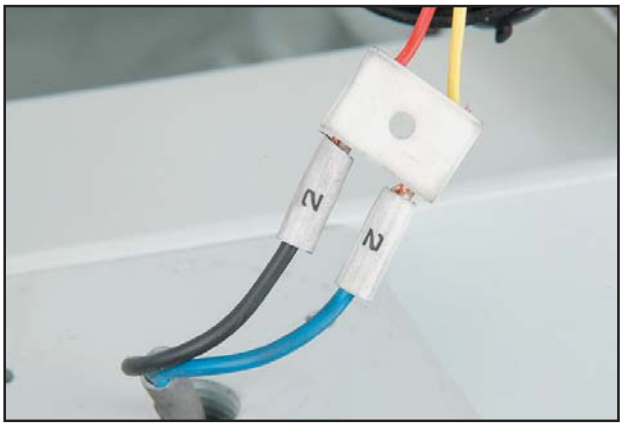
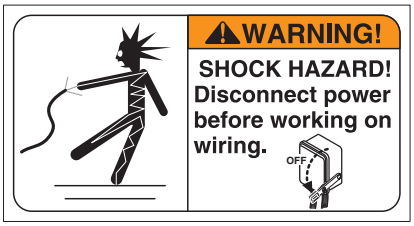
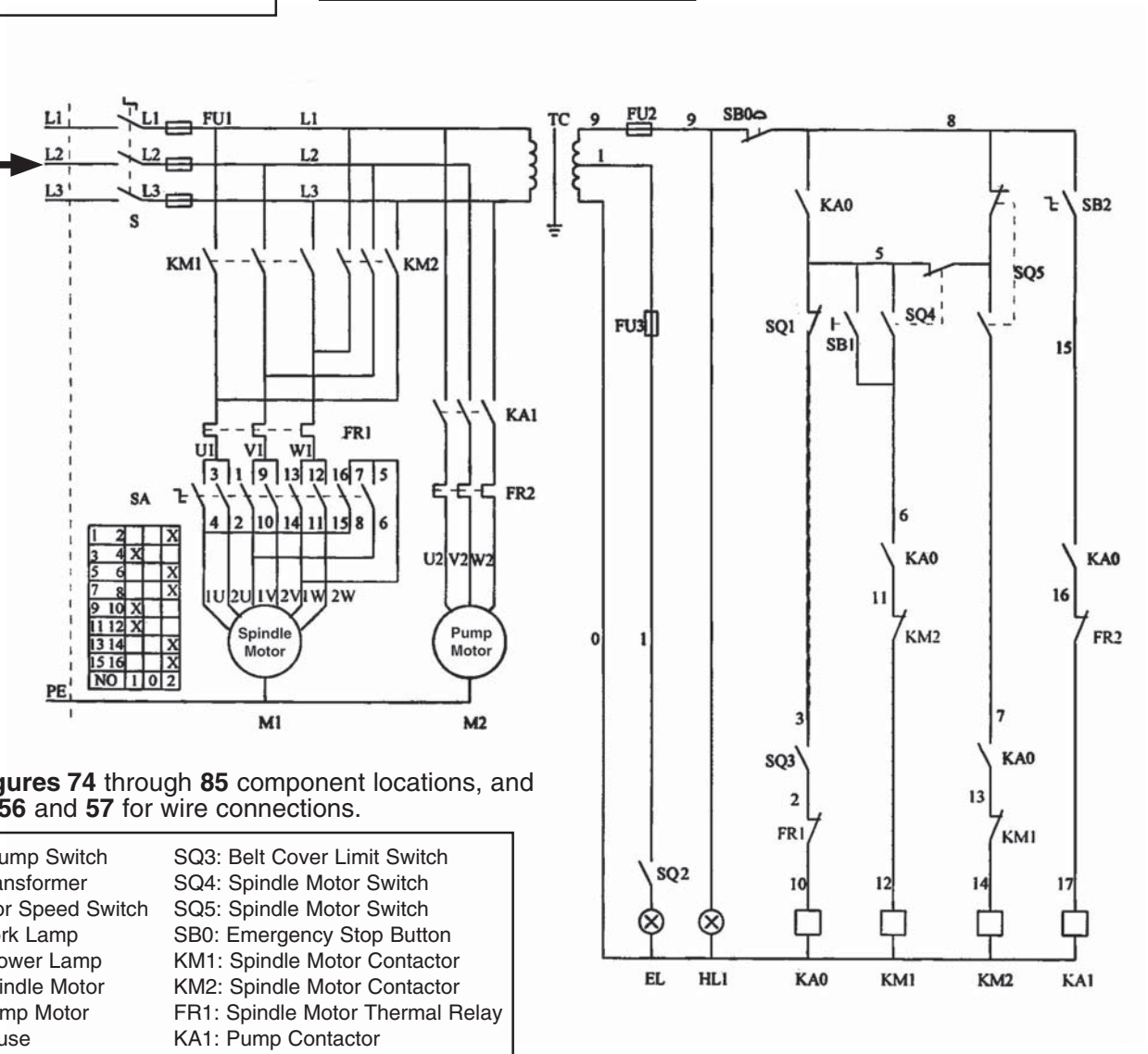


**Figure 85.** Work lamp (EL).

# Component Relationship Diagram

**If a phase converter is being used, connect the "Wild Wire" or "Manufactured Leg" to L2 or contactor and transformer failure may result!**




See **Figures 74** through **85** component locations, and **Pages 56** and **57** for wire connections.

| | |
|---|---|
| SB2: Pump Switch | SQ3: Belt Cover Limit Switch |
| TC: Transformer | SQ4: Spindle Motor Switch |
| S: Motor Speed Switch | SQ5: Spindle Motor Switch |
| EL: Work Lamp | SB0: Emergency Stop Button |
| HL1: Power Lamp | KM1: Spindle Motor Contactor |
| M1: Spindle Motor | KM2: Spindle Motor Contactor |
| M2: Pump Motor | FR1: Spindle Motor Thermal Relay |
| FU2: Fuse | KA1: Pump Contactor |
| FU3: Fuse | KA0: Master Power Contactor |
| SB1: Jog Button | FR2: Pump Motor Thermal Relay |
| SQ1: Brake Switch | FU1: Main Circuit Breaker |
| SQ2: Work Lamp Switch | |

# Main Electrical Box Wiring Diagram

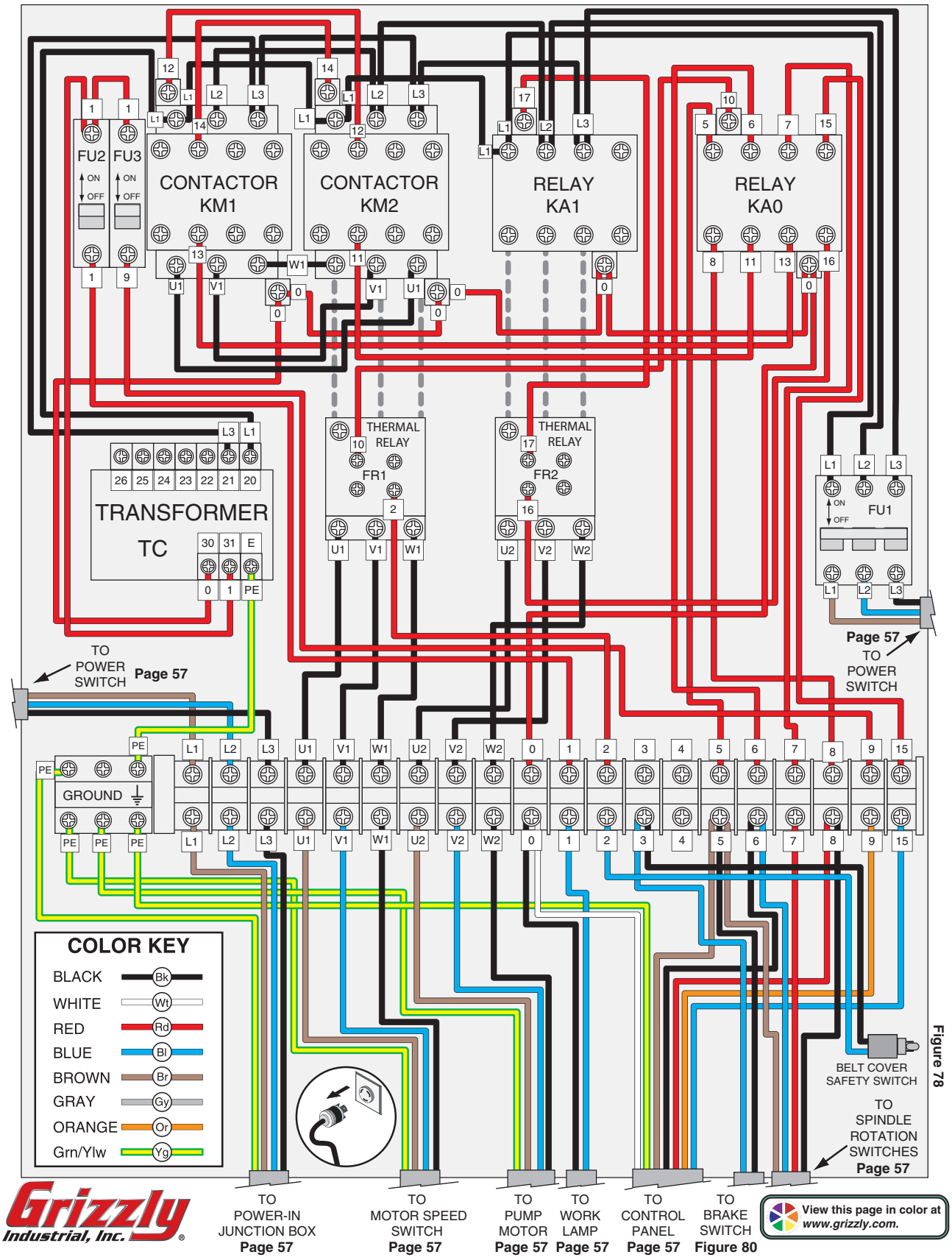
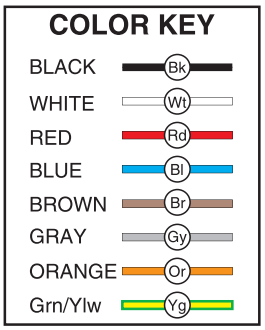



Figure 78

View this page in color at www.grizzly.com.

# Component Wiring Diagram

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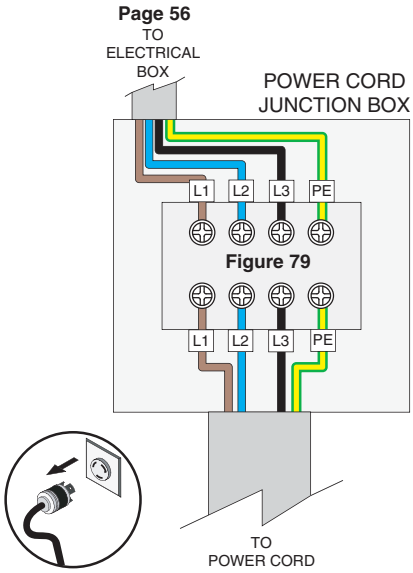


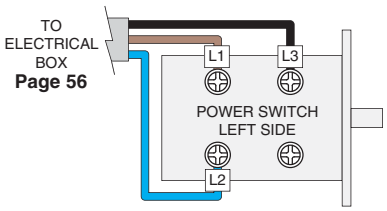




Figure 75

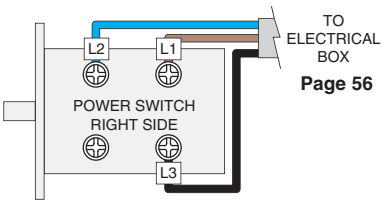



Figure 75

Figure 76

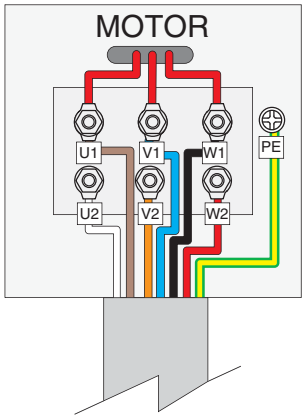
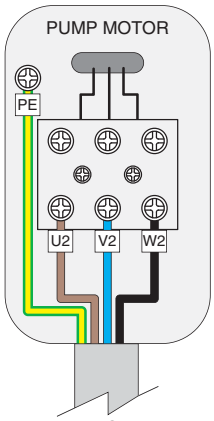



Figure 77



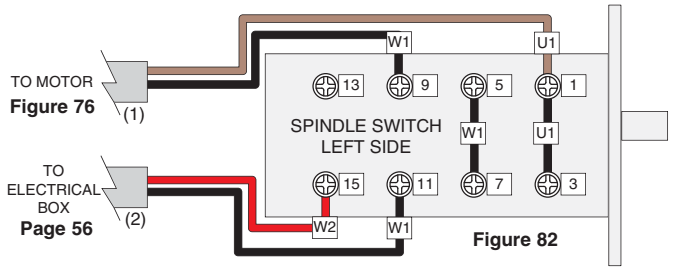
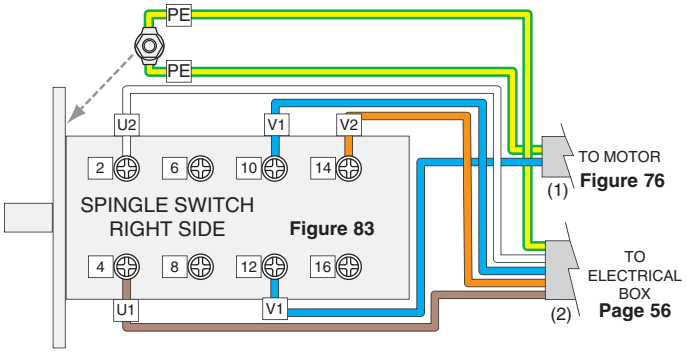
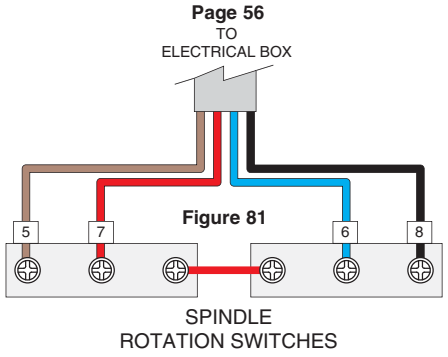




Figure 82



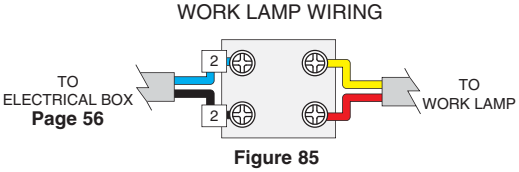
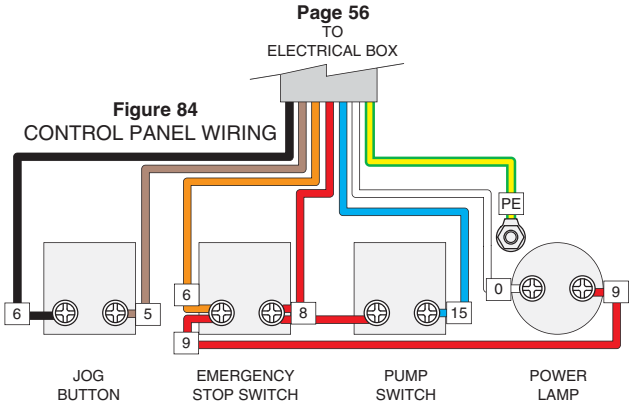
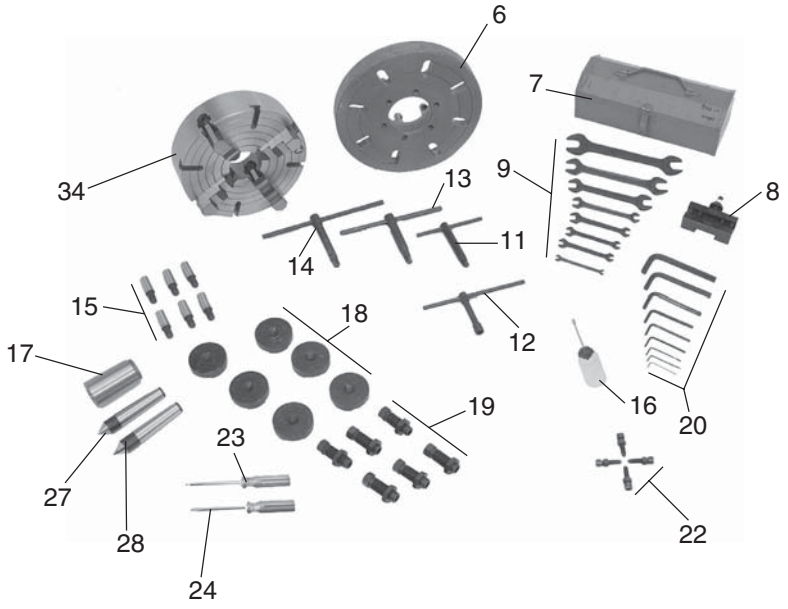



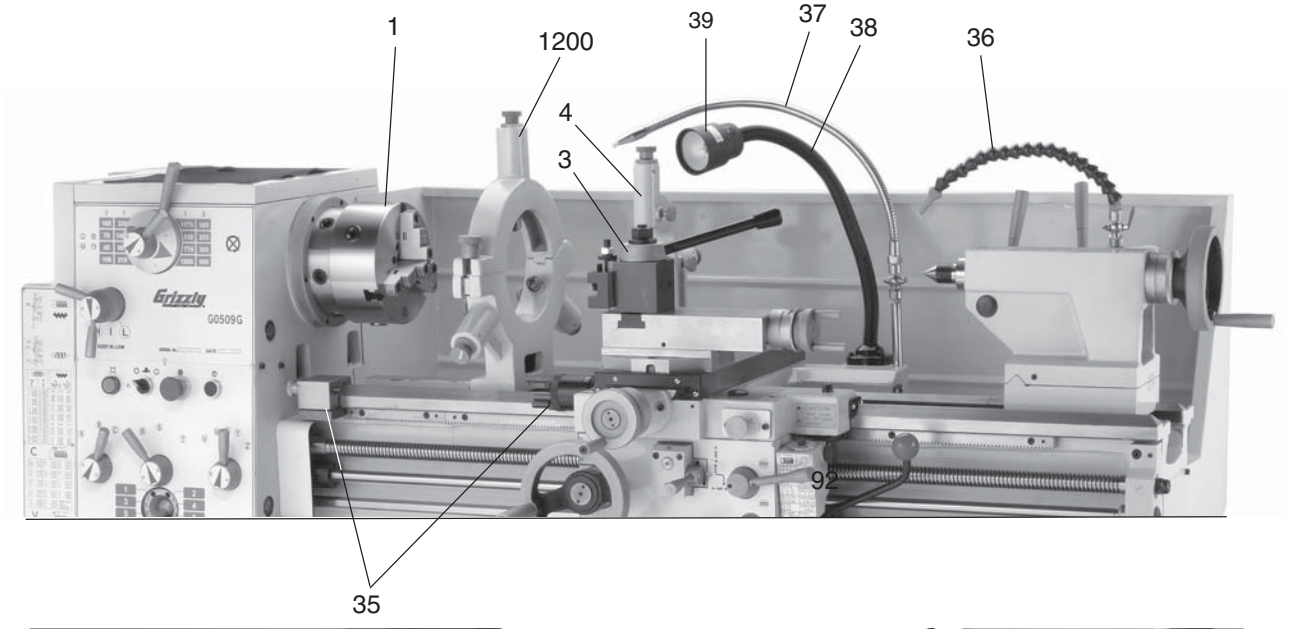

Figure 85



# SECTION 8: PARTS

## Accessories



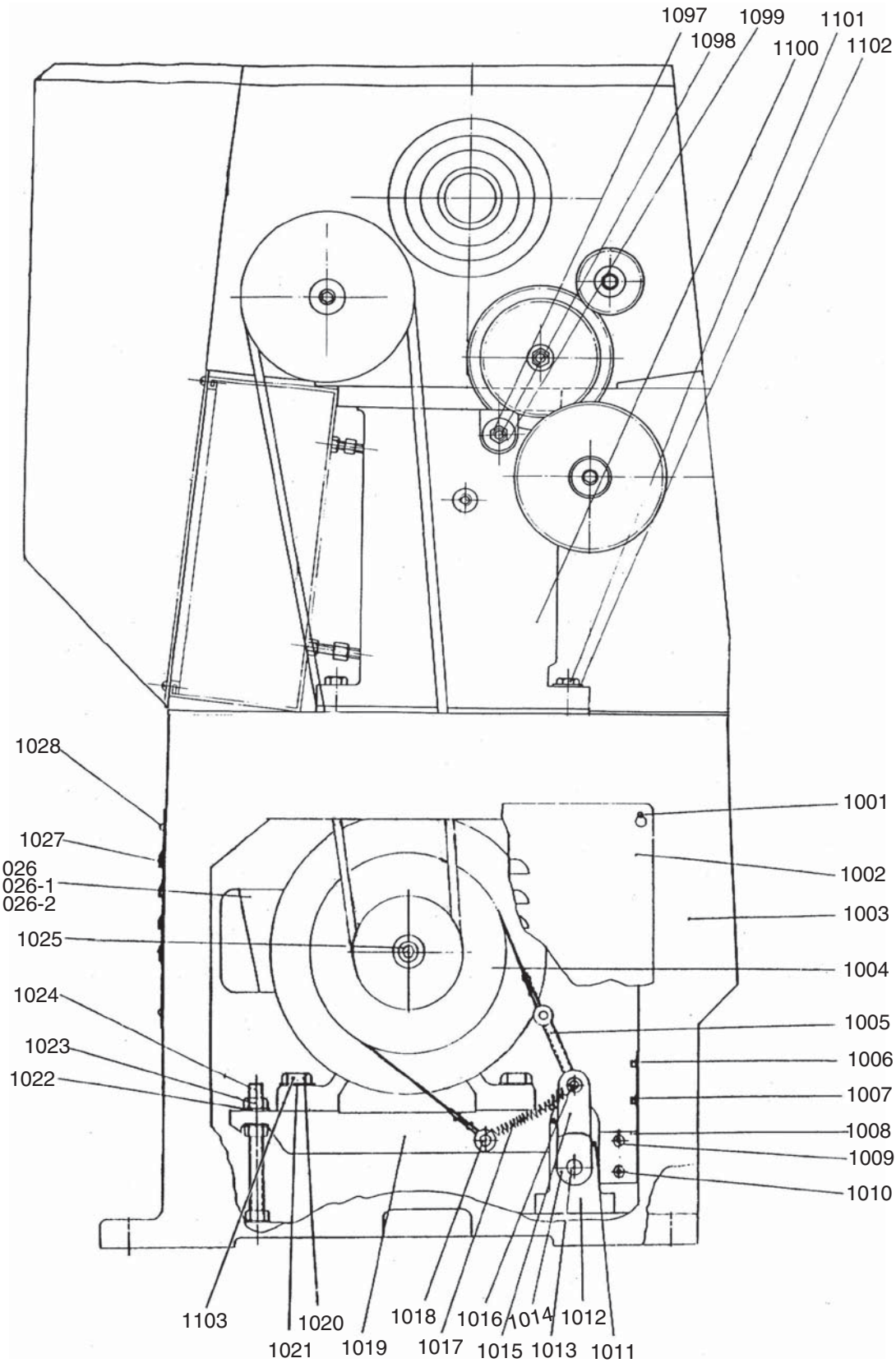



# Accessories Parts List

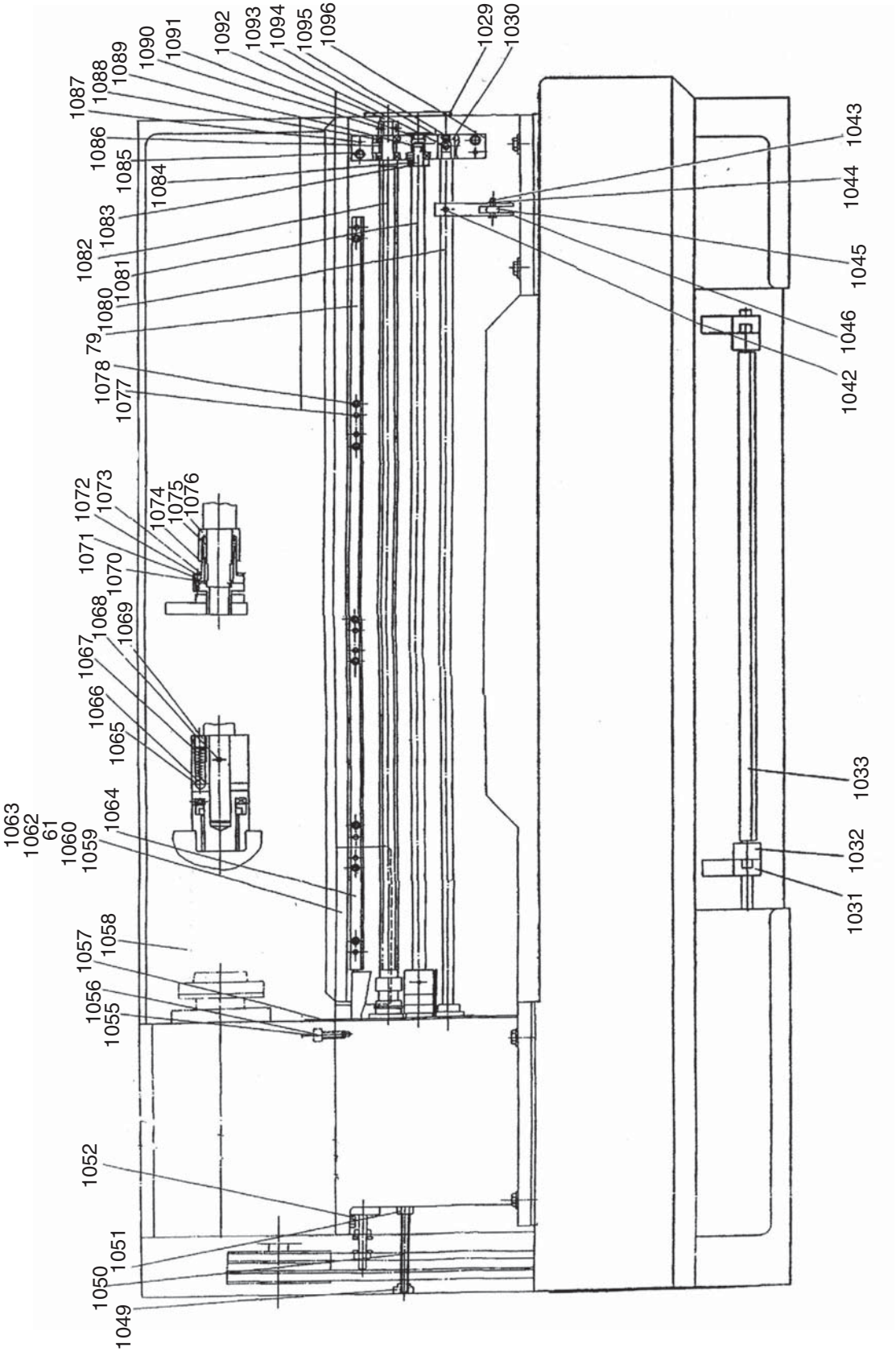
| REF | PART # | DESCRIPTION |
|---|---|---|
| 1 | P05090001 | 8" THREE-JAW CHUCK (G0509) |
| | P0509G0001 | 8" THREE-JAW CHUCK (G0509G) |
| 3 | P05090003 | TOOL POST W/TOOL HOLDER |
| 4 | P05090004 | COMPLETE FOLLOW REST |
| 6 | P05090006 | 14" FACEPLATE |
| 7 | P05090007 | TOOL BOX |
| 8 | P05090008 | TOOL HOLDER |
| 9 | P05090009 | WRENCH SET |
| 11 | P05090011 | CAM LOCK T-WRENCH |
| 12 | P05090012 | TOOL HOLDER T-WRENCH |
| 13 | P05090013 | 4-JAW CHUCK T-WRENCH |
| 14 | P05090014 | 3-JAW CHUCK T-WRENCH |
| 15 | P05090015 | 4-JAW CHUCK CAMLOCK STUDS |
| 16 | P05090016 | OIL BOTTLE |
| 17 | P05090017 | MT#6 TO MT#4 ADAPTER |

| REF | PART # | DESCRIPTION |
|---|---|---|
| 18 | P05090018 | CAST-IRON FEET |
| 19 | P05090019 | JACKING STUDS W/NUTS |
| 20 | P05090020 | HEX WRENCH SET |
| 22 | P05090022 | SPIDER SCREWS |
| 23 | P05090023 | #2 PHILLIPS SCREWDRIVER |
| 24 | P05090024 | #2 STANDARD SCREWDRIVER |
| 27 | P05090027 | CARBIDE TIP DEAD CENTER MT#4 |
| 28 | P05090028 | STANDARD TIP DEAD CENTER MT#4 |
| 34 | P0509034 | 12" FOUR-JAW UNIVERSAL CHUCK |
| 35 | P05090035 | MANUAL MICROMITER STOP KIT |
| 36 | P0509G8009 | TAILSTOCK COOLANT KIT (G0509G) |
| 37 | P05090037 | CUTTING COOLANT HOSE KIT |
| 38 | P05090038 | WORK LAMP ASSEMBLY |
| 39 | P05090039 | LAMP BULB |
| 1200 | P05091200 | COMPLETE STEADY REST |

# Frame, Ways, & Stand (1-2)



# Frame, Ways, & Stand (2-2)

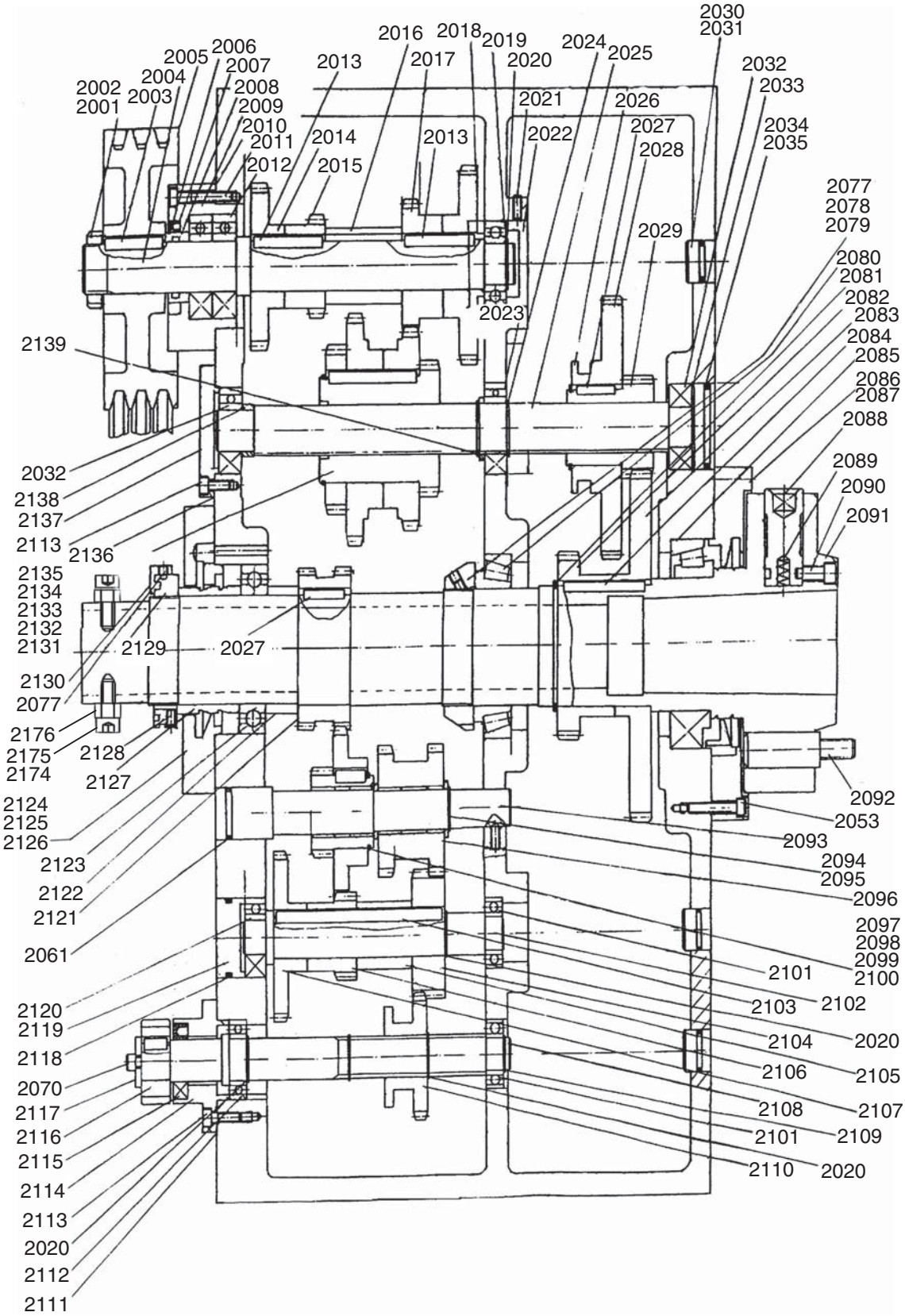


# Frame, Ways, & Stand Parts List

| REF | PART # | DESCRIPTION |
|---|---|---|
| 61 | P0509061 | TAPER PIN 8 X 85MM |
| 79 | P0509079 | RACK |
| 1001 | PS68M | PHLP HD SCR M6-1 X 10 |
| 1002 | P05091002 | COVER (G0509) |
| | P0509G1002 | COVER (G0509G) |
| 1003 | P05091003 | STAND |
| 1004 | P05091004 | PULLEY |
| 1005 | P05091005 | BELT BRAKE |
| 1006 | PS68M | PHLP HD SCR M6-1 X 10 |
| 1007 | PS68M | PHLP HD SCR M6-1 X 10 |
| 1008 | P05091008 | SWITCH SEAT |
| 1009 | PN04M | HEX NUT M4-.7 |
| 1010 | PSB21M | CAP SCREW M4-.7 X 30 |
| 1011 | P05091011 | LIMIT SWITCH |
| 1012 | P05091012 | MOTOR SEAT BRACKET |
| 1013 | P05091013 | SHAFT |
| 1014 | P05091014 | CAM |
| 1015 | P05091015 | BRAKE ARM |
| 1016 | P05091016 | SHAFT |
| 1017 | P05091017 | SPRING |
| 1018 | P05091018 | SHAFT |
| 1019 | P05091019 | MOTOR SEAT |
| 1020 | PB31M | HEX BOLT M10-1.5 X 40 |
| 1021 | PLW06M | LOCK WASHER 10MM |
| 1022 | PLW10M | LOCK WASHER 16MM |
| 1023 | PN13M | HEX NUT M16-2 |
| 1024 | P05091024 | THREADED STUD M16-2 X 150 |
| 1025 | P05091025 | SPECIAL WASHER |
| 1026 | P05091026 | MOTOR |
| 1026-1 | P05091026-1 | MOTOR FAN COVER |
| 1026-2 | P05091026-2 | MOTOR FAN |
| 1027 | P05091027 | COVER (G0509) |
| | P0509G1027 | COVER (G0509G) |
| 1028 | PSB04M | CAP SCREW M6-1 X 10 |
| 1029 | P05091029 | COVER |
| 1030 | P05091030 | SLEEVE |
| 1031 | P05091031 | BRACKET |
| 1032 | P05091032 | ARM |
| 1033 | P05091033 | BRAKE PEDAL |
| 1042 | PSB52M | CAP SCREW M8-1.25 X 10 |
| 1043 | P05091043 | CLEVIS PIN 7.5 X 25MM |
| 1044 | PEC09M | E-CLIP 6MM |
| 1045 | P05091045 | ROD |
| 1046 | P05091046 | LEVER |
| 1049 | P05091049 | KNURLED THUMB NUT |
| 1050 | P05091050 | MOUNTING STUD |
| 1051 | PN02M | HEX NUT M10-1.5 |
| 1052 | PB35M | HEX BOLT M12-1.75 X 40 |

| REF | PART # | DESCRIPTION |
|---|---|---|
| 1055 | PSB92M | CAP SCREW M12-1.75 X 40 |
| 1056 | P05091056 | DOWEL PIN 12 X 30MM |
| 1057 | P05091057 | COVER |
| 1058 | P05091058 | GUARD ASSEMBLY |
| 1059 | P05091059 | GAP BLOCK |
| 1060 | PSB70M | CAP SCREW M10-1.5 X 45 |
| 1062 | PN03M | HEX NUT M8-1.25 |
| 1063 | PSB05M | CAP SCREW M8-1.25 X 50 |
| 1064 | P05091064 | RACK |
| 1065 | P05091065 | CLUTCH |
| 1066 | P05091066 | STEEL BALL 8MM |
| 1067 | P05091067 | TAPER PIN 5 X 45MM |
| 1068 | P05091068 | COMPRESSION SPRING 1.2 X 6 X 46MM |
| 1069 | P05091069 | SPECIAL SCR M10-1.5 X 10 |
| 1070 | P05091070 | SLEEVE |
| 1071 | P05091071 | DOWEL PIN |
| 1072 | P05091072 | THRUST WASHER |
| 1073 | PR19M | EXT RETAINING RING 28MM |
| 1074 | PK08M | KEY 5 X 5 X 16MM |
| 1075 | P05091075 | COMPRESSION SPRING 1.8 X 2.5 X 55 |
| 1076 | P05091076 | COVER |
| 1077 | PSB07M | CAP SCREW M6-1 X 30 |
| 1078 | PRP08M | ROLL PIN 6 X 30MM |
| 1080 | P05091080 | ROD |
| 1081 | P05091081 | FEED ROD |
| 1082 | P05091082 | LEAD SCREW |
| 1083 | P05091083 | SLEEVE |
| 1084 | PSS02M | SET SCREW M6-1 X 6 |
| 1085 | PSB40M | CAP SCREW M8-1.25 X 35 |
| 1086 | P05091086 | SLEEVE |
| 1087 | P05091087 | TAPER PIN 6 X 50MM |
| 1088 | P8203 | THRUST BEARING 8203 |
| 1089 | P05091089 | SLEEVE |
| 1090 | PSS03M | SET SCREW M6-1 X 8 |
| 1091 | P05091091 | PLUG |
| 1092 | P05091092 | END PLAY ADJUSTMENT NUT |
| 1093 | P05091093 | STEEL BALL 9.5MM |
| 1094 | P05091094 | COMPRESSION SPRING 1 X 9 X 20MM |
| 1095 | PSB68M | CAP SCREW M6-1 X 8 |
| 1096 | P05091096 | BRACKET |
| 1097 | P05091097 | STUD M12-1.75 X 100 |
| 1098 | PN09M | HEX NUT M12-1.75 |
| 1099 | PW06M | FLAT WASHER 12MM |
| 1100 | P05091100 | BED |
| 1101 | PB24M | HEX BOLT M12-1.75 X 45 |
| 1102 | PLW05M | LOCK WASHER 12MM |
| 1103 | P0509G1103 | BUFFER BUMPER |

# Headstock (1-3)



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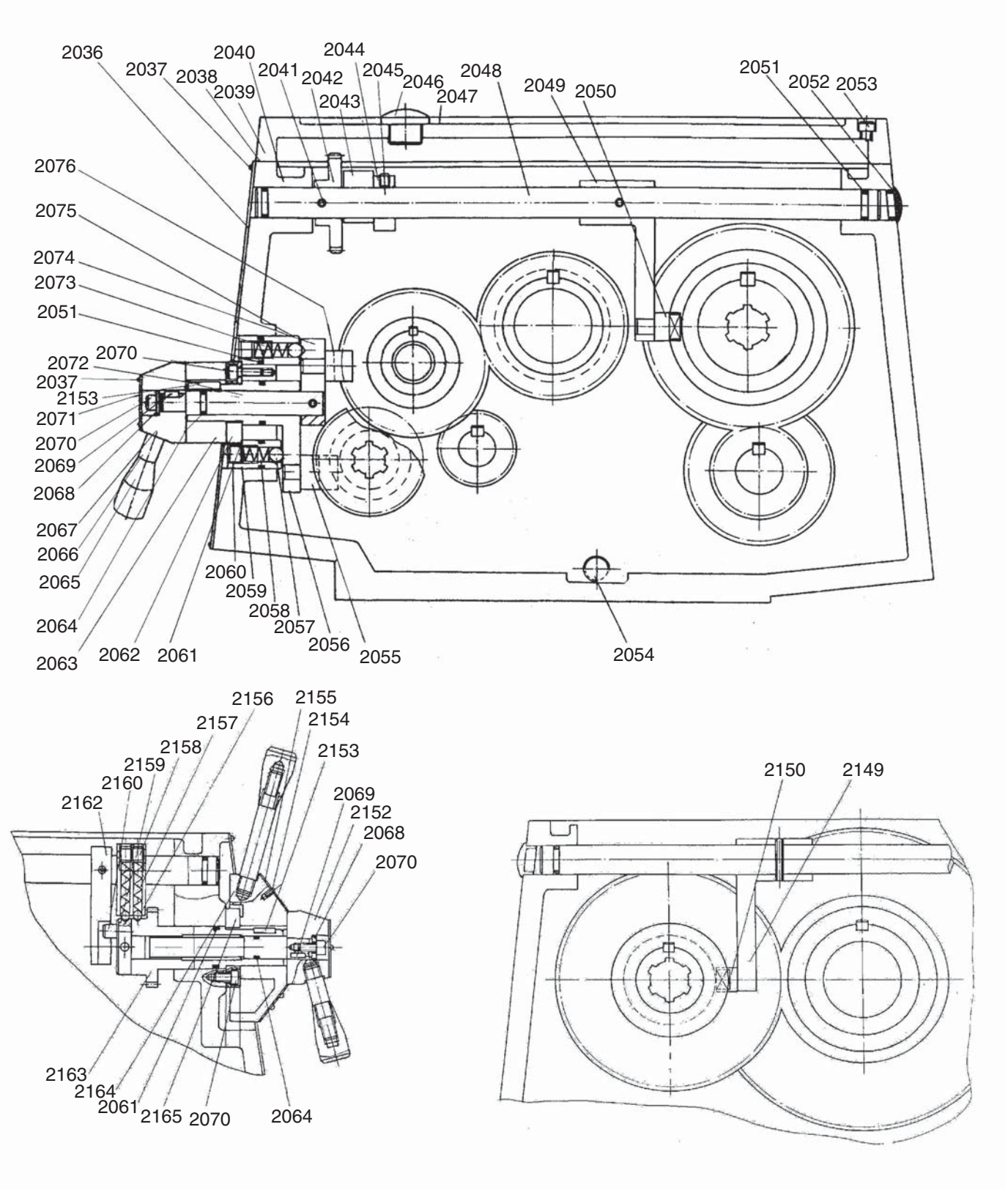

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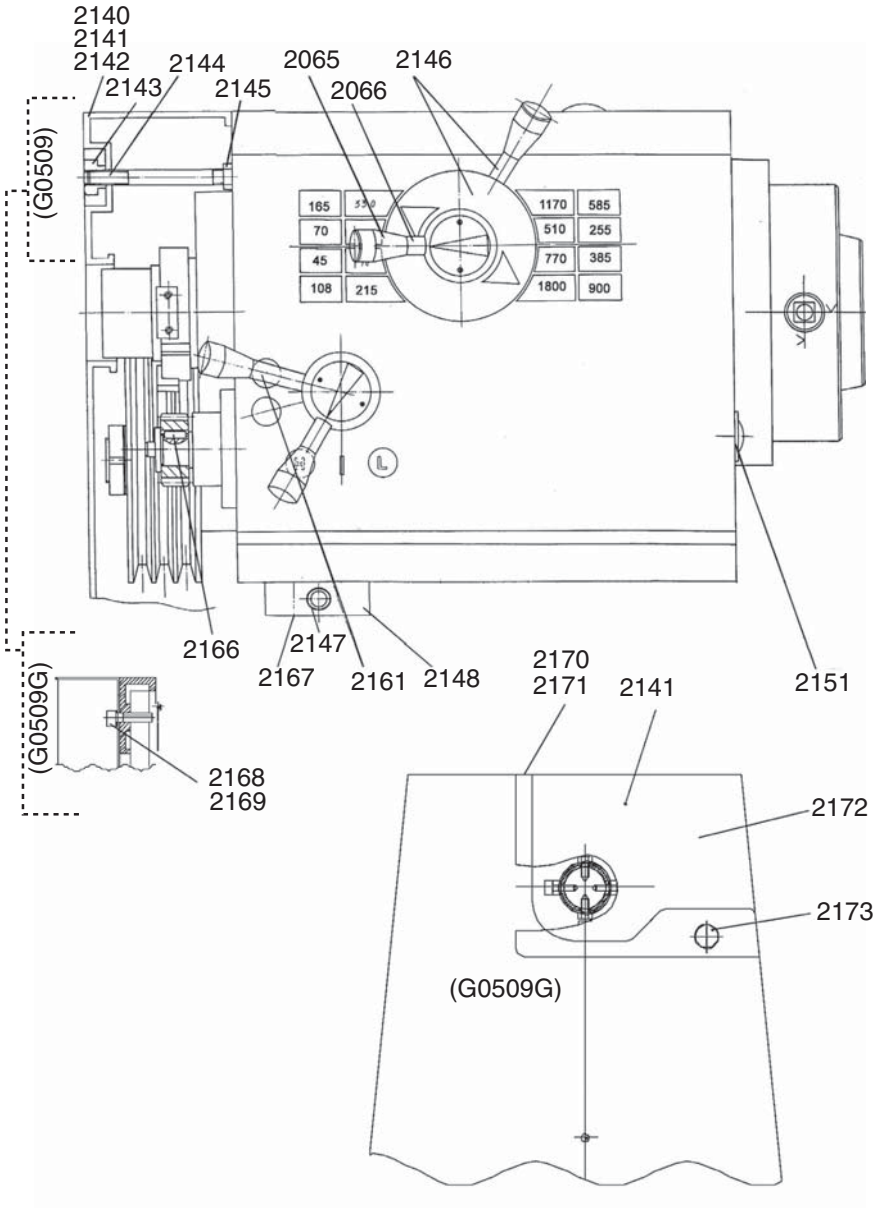


# Headstock Parts List

| REF | PART # | DESCRIPTION |
|---|---|---|
| 2001 | P05092001 | HEX NUT M30-1.5 |
| 2002 | P05092002 | TOOTHED LOCK WASHER 30MM |
| 2003 | PK41M | KEY 8 X 8 X 40MM |
| 2004 | P05092004 | SHAFT |
| 2005 | P05092005 | PULLEY |
| 2006 | P05092006 | SPACER |
| 2007 | P05092007 | OIL SEAL |
| 2008 | P05092008 | O-RING 36 X 3.5MM |
| 2009 | P05092009 | BEARING COVER |
| 2010 | P05092010 | PACKING |
| 2011 | PSB29M | CAP SCREW M6-1 X 40 |
| 2012 | P6206ZZ | BALL BEARING 6206 |
| 2013 | P05092013 | KEY 8 X 8 X 50MM |
| 2014 | P05092014 | GEAR 38-TOOTH |
| 2015 | P05092015 | GEAR 33-TOOTH |
| 2016 | P05092016 | SLEEVE |
| 2017 | P05092017 | GEAR 23-TOOTH |
| 2018 | P05092018 | GEAR 33-TOOTH |
| 2019 | P6205ZZ | BALL BEARING 6205ZZ |
| 2020 | PR11M | EXT RETAINING RING 25MM |
| 2021 | PSS34M | SET SCREW M5-.8 X 16 |
| 2022 | P05092022 | PLUG |
| 2023 | P05092023 | BALL BEARING E206 (G0509) |
| 2024 | PR15M | EXT RETAINING RING 30MM |
| 2025 | P05092025 | SHAFT |
| 2026 | PR56M | EXT RETAINING RING 45MM |
| 2027 | PK136M | KEY 8 X 8 X 30MM |
| 2028 | P05092028 | GEAR 60-TOOTH |
| 2029 | P05092029 | GEAR 21-TOOTH |
| 2030 | P05092030 | PLUG |
| 2031 | P05092031 | O-RING 19 X 2.65MM |
| 2032 | P6305ZZ | BALL BEARING 6305ZZ |
| 2033 | P05092033 | EXT RETAINING RING 62MM |
| 2034 | P05092034 | COVER |
| 2035 | P05092035 | O-RING 56 X 3.5MM |
| 2036 | P05092036 | PLATE |
| 2037 | P05092037 | FLAT HD SCR M3-.5 X 15 |
| 2038 | P05092038 | PACKING |
| 2039 | P05092039 | COVER |
| 2040 | P05092040 | CASTING |
| 2041 | PRP05M | ROLL PIN 5 X 30MM |
| 2042 | P05092042 | GEAR 43-TOOTH |
| 2043 | P05092043 | BRACKET |
| 2044 | P05092044 | SLEEVE |
| 2045 | PSS01M | SET SCREW M6-1 X 10 |
| 2046 | P05092046 | PLUG |
| 2047 | P05092047 | COVER |

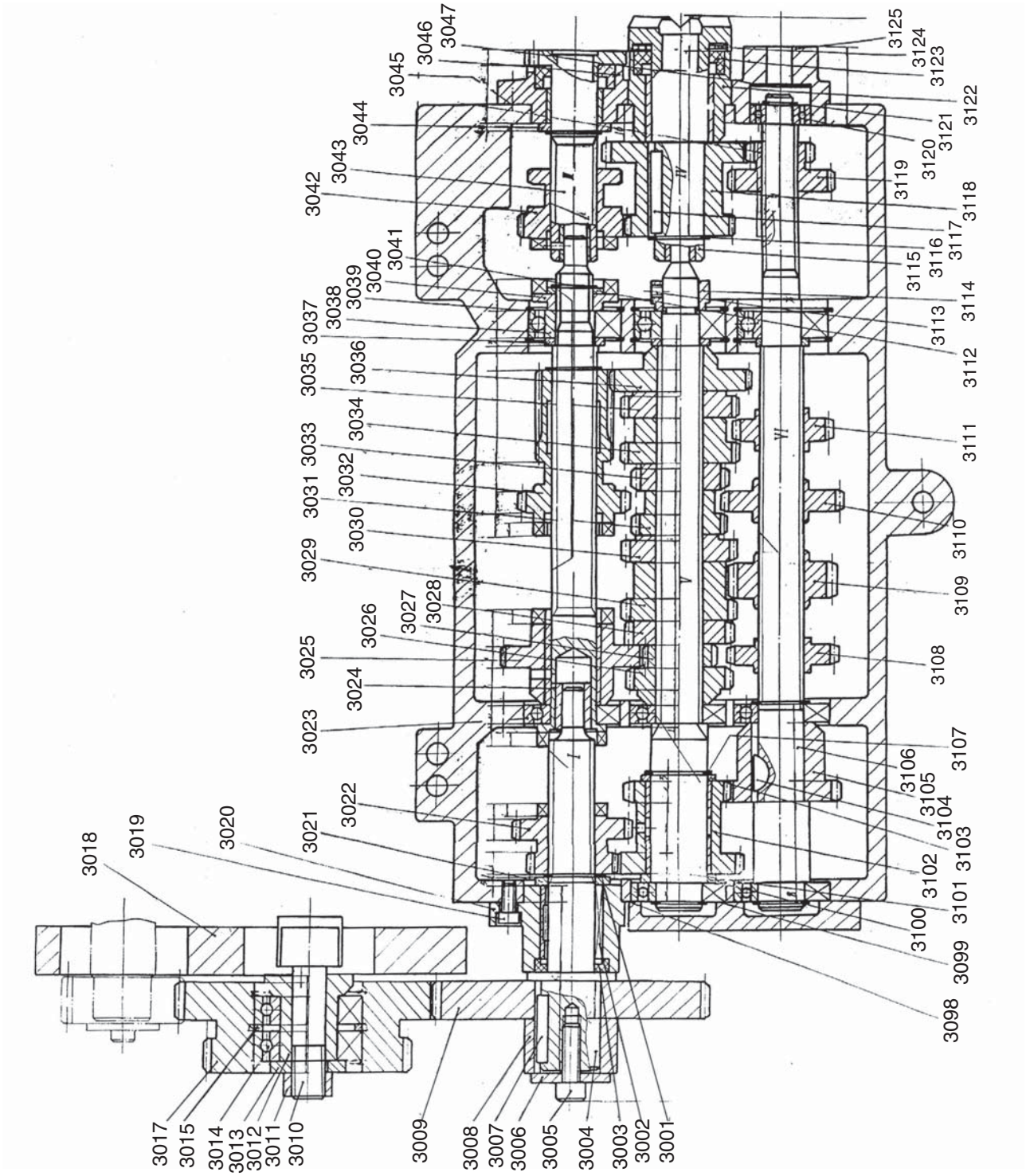
| REF | PART # | DESCRIPTION |
|---|---|---|
| 2048 | P05092048 | SHAFT |
| 2049 | P05092049 | LEVER |
| 2050 | P05092050 | FORK |
| 2051 | P05092051 | O-RING 14 X 2.65MM |
| 2052 | P05092052 | PLUG |
| 2053 | PSB07M | CAP SCREW M6-1 X 30 |
| 2054 | P05092054 | OIL PLUG |
| 2055 | P05092055 | FORK |
| 2056 | P05092056 | LEVER |
| 2057 | P05092057 | STEEL BALL 10MM |
| 2058 | P05092058 | COMPRESSION SPRING 0.9 X 9 X 35MM |
| 2059 | P05092059 | BRACKET |
| 2060 | PSS01M | SET SCREW M6-1 X 10 |
| 2061 | P05092061 | O-RING 28 X 3.1MM |
| 2062 | P05092062 | COVER |
| 2063 | P05092063 | LEVER HUB |
| 2064 | P05092064 | O-RING 10 X 2.65MM |
| 2066 | P05092066 | LEVER |
| 2067 | P05092067 | LEVER HUB |
| 2068 | PR04M | EXT RETAINING RING 6MM |
| 2069 | PK05M | KEY 4 X 4 X 10MM |
| 2070 | PSB26M | CAP SCREW M6-1 X 12 |
| 2071 | P05092071 | PLATE |
| 2072 | P05092072 | SHAFT |
| 2073 | P05092073 | COMPRESSION SPRING 0.9 X 9 X 40MM |
| 2074 | P05092074 | LEVER |
| 2075 | P05092075 | BRACKET |
| 2076 | P05092076 | FORK |
| 2077 | PSS03M | SET SCREW M6-1 X 8 |
| 2078 | P05092078 | SPANNER NUT |
| 2079 | P05092079 | LEAD PLUG |
| 2080 | P05092080 | TAPERED ROLLER BEARING |
| 2081 | P05092081 | EXT RETAINING RING 75MM |
| 2082 | P05092082 | GEAR 43-TOOTH |
| 2083 | P05092083 | GEAR 82-TOOTH |
| 2084 | P05092084 | KEY 8 X 8 X 60MM |
| 2085 | P05092085 | TAPERED ROLLER BEARING |
| 2086 | P05092086 | COVER |
| 2087 | P05092087 | PACKING |
| 2088 | P05092088 | CAM LOCK |
| 2089 | P05092089 | COMPRESSION SPRING |
| 2090 | P05092090 | SPECIAL CAP SCREW |
| 2091 | P05092091 | SPINDLE D1-6 (G0509) |
| | P0509G2091 | SPINDLE D1-6 (G0509G) |
| 2092 | P05092092 | CAM LOCK STUD |
| 2093 | P05092093 | SHAFT |
| 2094 | P05092094 | SPACER |

# Headstock Parts List

| REF | PART # | DESCRIPTION |
|---|---|---|
| 2095 | PR10M | EXT RETAINING RING 22MM |
| 2096 | P05092096 | GEAR 36-TOOTH |
| 2097 | P05092097 | GEAR 24-TOOTH |
| 2098 | P05092098 | GEAR 48-TOOTH |
| 2099 | PK34M | KEY 5 X 5 X 20MM |
| 2100 | PR62M | EXT RETAINING RING 42MM |
| 2101 | P6204-2RS | BALL BEARING 6204 |
| 2102 | P05092102 | SHAFT |
| 2103 | P05092103 | KEY 8 X 8 X 115MM |
| 2104 | P05092104 | GEAR 26-TOOTH |
| 2105 | P05092105 | SLEEVE |
| 2106 | P05092106 | GEAR 24-TOOTH |
| 2107 | P05092107 | GEAR 48-TOOTH |
| 2108 | P05092108 | SHAFT |
| 2109 | PR09M | EXT RETAINING RING 20MM |
| 2110 | P05092110 | GEAR 36-TOOTH |
| 2111 | P05092111 | PACKING |
| 2112 | P60052RS | BALL BEARING 6005 |
| 2113 | PSB27M | CAP SCREW M6-1 X 14 |
| 2114 | P05092114 | COVER |
| 2115 | P05092115 | OIL SEAL |
| 2116 | P05092116 | CHANGE GEAR 24-TOOTH |
| 2117 | P05092117 | SPACER |
| 2118 | P05092118 | O-RING 46 X 3.5MM |
| 2119 | P05092119 | COVER |
| 2120 | P6204-2RS | BALL BEARING 6204 |
| 2121 | P05092121 | GEAR 48-TOOTH |
| 2122 | P05092122 | SLEEVE |
| 2123 | P05092123 | BALL BEARING E213 |
| 2124 | P05092124 | COVER |
| 2125 | P05092125 | PACKING |
| 2126 | PSB06M | CAP SCREW M6-1 X 25 |
| 2127 | P05092127 | OIL RING |
| 2128 | PSS01M | SET SCREW M6-1 X 10 |
| 2129 | P05092129 | SPANNER NUT |
| 2130 | P05092130 | COUNTERWEIGHT |
| 2131 | P05092131 | GEAR 39-TOOTH |
| 2132 | P05092132 | GEAR 54-TOOTH |
| 2133 | P05092133 | GEAR 47-TOOTH |
| 2134 | P05092134 | GEAR 31-TOOTH |
| 2135 | PR13M | EXT RETAINING RING 65MM |
| 2136 | P05092136 | PACKING |

| REF | PART # | DESCRIPTION |
|---|---|---|
| 2137 | P05092137 | COVER |
| 2138 | P05092138 | SPACER |
| 2139 | P05092139 | SPACER |
| 2140 | P05092140 | PLATE |
| 2141 | P05092141 | COVER (G0509) |
| | P0509G2141 | COVER (G0509G) |
| 2142 | PS79M | PHLP HD SCR M3-.5 X 8 |
| 2143 | P05092143 | KNURLED NUT M10-1.5 |
| 2144 | P05092144 | STUD M10-1.5 X 85 |
| 2145 | PN02M | HEX NUT M10-1.5 |
| 2146 | P05092146 | LEVER W/HUB ASSEMBLY |
| 2147 | P05092147 | SPECIAL SCR M12-1.75 X 20 |
| 2148 | P05092148 | BRACKET |
| 2149 | P05092149 | BRACKET |
| 2150 | P05092150 | FORK |
| 2151 | P05092151 | SIGHT GLASS 16MM |
| 2152 | P05092152 | LEVER BRACKET |
| 2153 | PK14M | KEY 5 X 5 X 18MM |
| 2154 | P05092154 | RIVET 2 X 5MM |
| 2155 | P05092155 | PLATE |
| 2156 | P05092156 | STEEL BALL 6.5MM |
| 2157 | P05092157 | COMPRESSION SPRING 1 X 5 X 22MM |
| 2158 | PSS14M | SET SCREW M8-1.25 X 12 |
| 2159 | P05092159 | LEVER SHAFT |
| 2160 | P05092160 | DOWEL PIN |
| 2161 | P05092161 | LEVER |
| 2162 | P05092162 | BRACKET |
| 2163 | P05092163 | GEAR SHAFT 37-TOOTH |
| 2164 | P05092164 | LEVER BRACKET |
| 2165 | P05092165 | COVER |
| 2166 | PK101M | KEY 6 X 6 X 14MM |
| 2167 | P05092167 | SPECIAL ADJUSTING SCREW |
| 2168 | PSB143M | CAP SCREW M10-1.5 X 50 (G0509G) |
| 2169 | PW04M | FLAT WASHER 10MM (G0509G) |
| 2170 | P0509G2170 | HINGE (G0509G) |
| 2171 | PSB110M | CAP SCREW M4-.7 X 6 (G0509G) |
| 2172 | P0509G2172 | COVER (G0509G) |
| 2173 | PSB31M | CAP SCREW M8-1.25 X 25 (G0509G) |
| 2174 | P0509G2174 | SPIDER BOLT 3/8-18 X 1-1/2" (G0509G) |
| 2175 | P0509G2175 | SPIDER BOLT 3/8-24 X 1/2" (G0509G) |
| 2176 | PN11 | HEX NUT 3/8-24 (G0509G) |

# Gearbox (1-3)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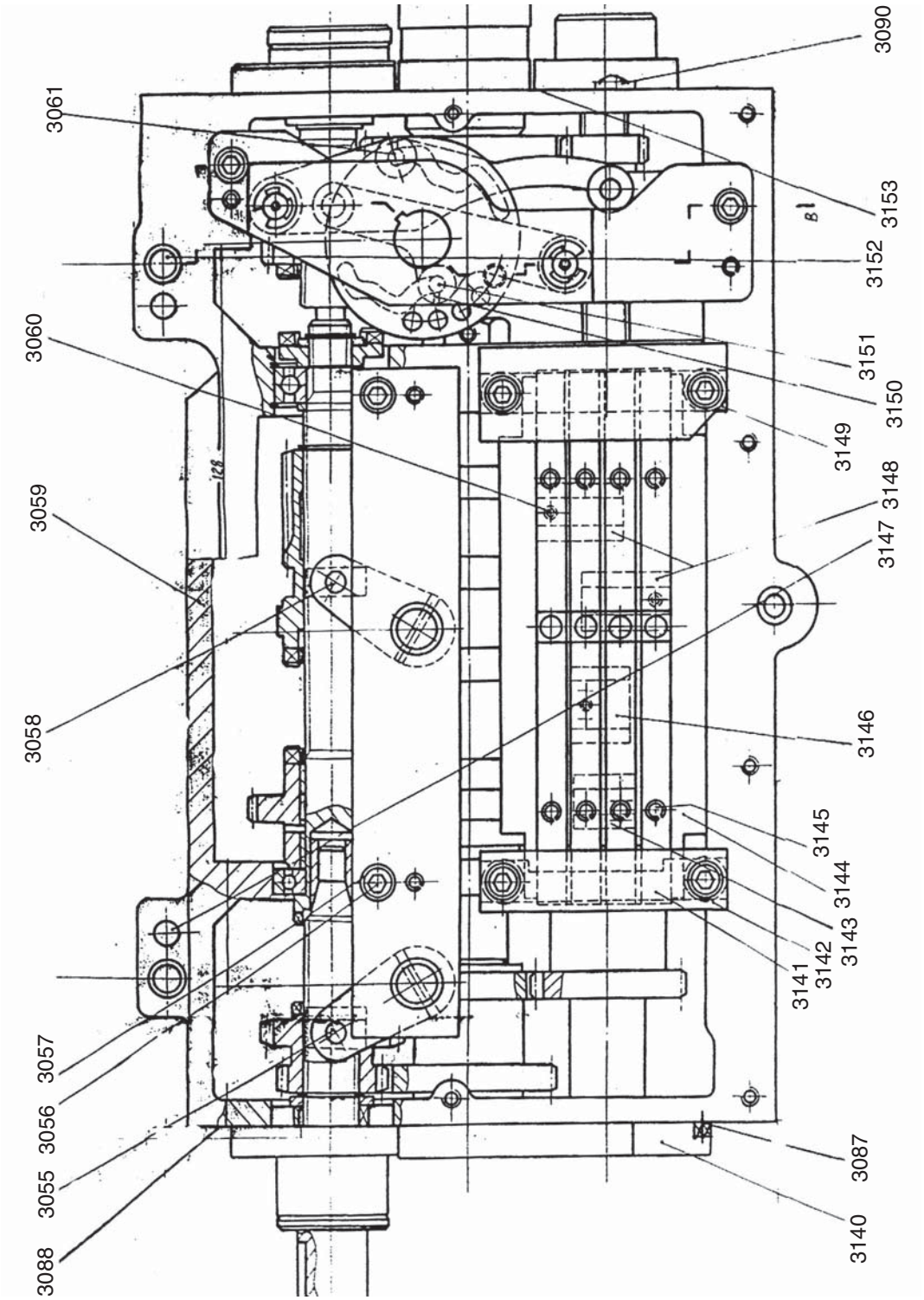
# Gearbox (2-3)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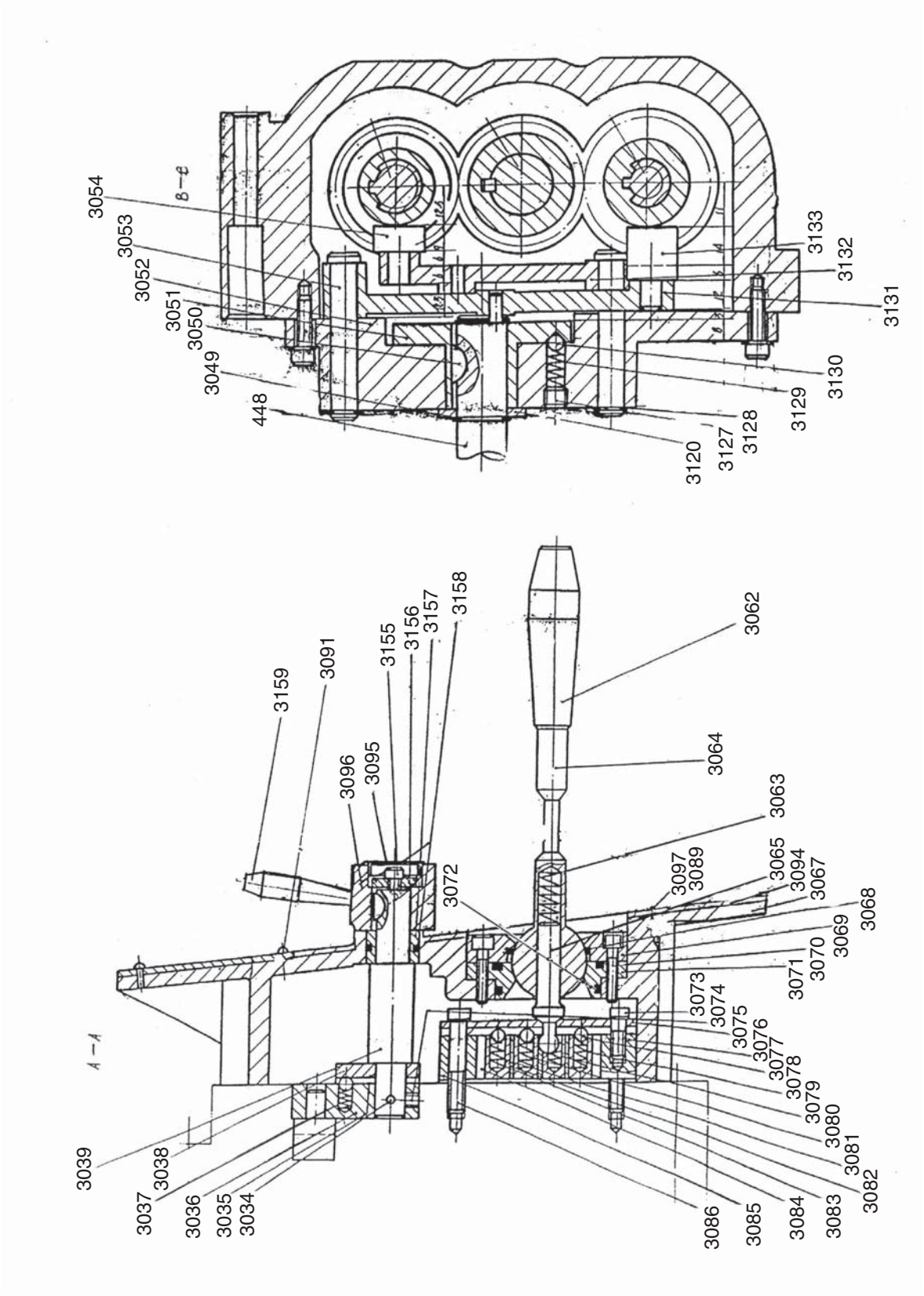
# Gearbox (3-3)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# Gearbox Parts List

| REF | PART # | DESCRIPTION |
|---|---|---|
| 448 | P05090448 | LEVER |
| 3001 | PEC06M | E-CLIP 20MM |
| 3002 | P05093002 | ROLLER BEARING 943/20 |
| 3003 | P05093003 | OIL SEAL |
| 3004 | P05093004 | SHAFT |
| 3005 | PSB11M | CAP SCREW M8-1.25 X 16 |
| 3006 | P05093006 | WIDE WASHER |
| 3007 | P05093007 | KEY 8 X 8 X 28MM |
| 3008 | P05093008 | SLEEVE |
| 3009 | P05093009 | CHANGE GEAR 57-TOOTH |
| 3010 | P05093010 | SHAFT |
| 3011 | PN32M | HEX NUT M14-2 |
| 3012 | P05093012 | SLEEVE |
| 3013 | P05093013 | WIDE WASHER 14MM |
| 3014 | P05093014 | ROLLER BEARING 160105 |
| 3015 | PR25M | INT RETAINING RING 47MM |
| 3017 | P05093017 | CHANGE GEAR 44/52-TOOTH |
| 3018 | P05093018 | BELLCRANK SWING ARM |
| 3019 | PSB01M | CAP SCREW M6-1 X 16 |
| 3020 | P05093020 | BRACKET |
| 3021 | P05093021 | THRUST WASHER |
| 3022 | P05093022 | GEAR 39/20-TOOTH |
| 3023 | P05093023 | BALL BEARING 7000104 |
| 3024 | P05093024 | SHAFT |
| 3025 | P05093025 | GEAR 38-TOOTH |
| 3026 | P05093026 | GEAR 22-TOOTH |
| 3027 | P05093027 | GEAR 19-TOOTH |
| 3028 | P05093028 | GEAR 20-TOOTH |
| 3029 | P05093029 | GEAR 24-TOOTH |
| 3030 | P05093030 | GEAR 23-TOOTH |
| 3031 | P05093031 | GEAR 27-TOOTH |
| 3032 | P05093032 | GEAR 23/19-TOOTH |
| 3033 | P05093033 | GEAR 24-TOOTH |
| 3034 | P05093034 | GEAR 28-TOOTH |
| 3035 | P05093035 | GEAR 26-TOOTH |
| 3036 | P05093036 | GEAR 38-TOOTH |
| 3037 | P05093037 | THRUST WASHER |
| 3038 | P203 | BALL BEARING 203 |
| 3039 | PR23M | INT RETAINING RING 40MM |
| 3040 | P05093040 | CLUTCH |
| 3041 | PR02M | EXT RETAINING RING 14MM |
| 3042 | P05093042 | CLUTCH GEAR |
| 3043 | P05093043 | SHAFT |
| 3044 | P05093044 | THRUST WASHER |
| 3045 | P05093045 | PACKING |
| 3046 | P05093046 | COVER |
| 3047 | P05093047 | THRUST WASHER |
| 3049 | PR18M | EXT RETAINING RING 17MM |
| 3050 | P05093050 | KEY 3 X 3 X 12MM |
| 3051 | P05093051 | CAM |
| 3052 | P05093052 | BRACKET |
| 3053 | P05093053 | SHAFT |

| REF | PART # | DESCRIPTION |
|---|---|---|
| 3054 | P05093054 | FORK |
| 3055 | P05093055 | FORK |
| 3056 | PSB01M | CAP SCREW M6-1 X 16 |
| 3057 | PLW03M | LOCK WASHER 6MM |
| 3058 | P05093058 | FORK |
| 3059 | P05093059 | CASTING |
| 3060 | PSB15M | CAP SCREW M5-.8 X 20 |
| 3061 | P05093061 | FORK |
| 3062 | P05093062 | LEVER |
| 3063 | P05093063 | COMPRESSION SPRING 1 X 8 X 32 |
| 3064 | P05093064 | LEVER |
| 3065 | P05093065 | SELECTOR |
| 3067 | P05093067 | COVER |
| 3068 | P05093068 | O-RING 30 X 2.65MM |
| 3069 | P05093069 | COVER |
| 3070 | PSB38M | CAP SCREW M5-.8 X 25 |
| 3071 | P05093071 | BRACKET |
| 3072 | P05093072 | O-RING 38.7 X 2.65MM |
| 3073 | PSB01M | CAP SCREW M6-1 X 16 |
| 3074 | P05093074 | BRACKET |
| 3075 | PSS02M | SET SCREW M6-1 X 6 |
| 3076 | P05093076 | CAP SCREW |
| 3077 | P05093077 | STEEL BALL 6MM |
| 3078 | P05093078 | FORK |
| 3079 | P05093079 | FORK |
| 3080 | P05093080 | FORK |
| 3081 | P05093081 | FORK |
| 3082 | P05093082 | DRIVE PLATE |
| 3083 | P05093083 | COMPRESSION SPRING .8 X 5 X 17 |
| 3084 | P05093084 | TOP PLATE |
| 3085 | P05093085 | SLEEVE |
| 3086 | PSB48M | CAP SCREW M6-1 X 35 |
| 3087 | P05093087 | PLUG |
| 3088 | P05093088 | OIL INLET PIPE |
| 3089 | PSB127M | CAP SCREW M6-1 X 65 |
| 3090 | P05093090 | SIGHT GLASS 20MM |
| 3091 | PS05M | PHLP HD SCR M5-.8 X 8 |
| 3094 | P05093094 | PLATE |
| 3095 | P05093095 | PLATE |
| 3096 | P05093096 | LEVER |
| 3097 | PSB42M | CAP SCREW M6-1 X 85 |
| 3098 | P05093098 | PACKING |
| 3099 | P05093099 | PACKING |
| 3100 | P05093100 | THRUST WASHER |
| 3101 | P05093101 | SHAFT |
| 3102 | P05093102 | GEAR 30/19-TOOTH |
| 3103 | P05093103 | THRUST WASHER |
| 3104 | PK08M | KEY 5 X 5 X 16MM |
| 3105 | P05093105 | GEAR 22-TOOTH |
| 3106 | P05093106 | SHAFT |
| 3107 | PR11M | EXT RETAINING RING 25MM |

# Gearbox Parts List

| REF | PART # | DESCRIPTION |
|---|---|---|
| 3108 | P05093108 | GEAR 22-TOOTH |
| 3109 | P05093109 | GEAR 22-TOOTH |
| 3110 | P05093110 | GEAR 33-TOOTH |
| 3111 | P05093111 | GEAR 22-TOOTH |
| 3112 | P05093112 | THRUST WASHER |
| 3113 | P05093113 | SPECIAL NUT |
| 3114 | PSS07M | SET SCREW M5-.8 X 5 |
| 3115 | P05093115 | SHAFT |
| 3116 | PR10M | EXT RETAINING RING 22MM |
| 3117 | PK15M | KEY 5 X 5 X 35MM |
| 3118 | P05093118 | GEAR 33-TOOTH |
| 3119 | P05093119 | GEAR 36/20-TOOTH |
| 3120 | P05093120 | ROLLER BEARING 101 |
| 3121 | PR03M | EXT RETAINING RING 12MM |
| 3122 | P05093122 | BRACKET |
| 3123 | P05093123 | OIL SEAL |
| 3124 | P8105 | THRUST BEARING 8105 |
| 3125 | P05093125 | BRACKET |
| 3126 | P05093126 | THRUST WASHER |
| 3127 | PSS20M | SET SCREW M8-1.25 X 8 |
| 3128 | PR39M | EXT RETAINING RING 8MM |
| 3129 | P05093083 | COMPRESSION SPRING |
| 3130 | P05092156 | STEEL BALL 6.5MM |
| 3131 | P05093131 | LEVER |
| 3132 | P05093132 | LEVER |
| 3133 | P05093133 | FORK |

| REF | PART # | DESCRIPTION |
|---|---|---|
| 3134 | PRP56M | ROLL PIN 4 X 25mm |
| 3135 | P05093135 | PACKING |
| 3136 | P05093136 | LEVER |
| 3137 | P05093083 | COMPRESSION SPRING |
| 3138 | P05093138 | SELECTOR BAR |
| 3139 | P05093139 | SHAFT |
| 3140 | P05093140 | COVER |
| 3141 | P05093141 | PLATE |
| 3142 | P05093142 | PLATE |
| 3143 | P05093143 | FORK |
| 3144 | PRP70M | ROLL PIN 5 X 18MM |
| 3145 | PRP44M | ROLL PIN 3 X 10MM |
| 3146 | P05093146 | FORK |
| 3147 | P05093147 | TAPER PIN 8 X 90MM |
| 3148 | P05093148 | FORK |
| 3149 | P05093149 | PLATE |
| 3150 | PRP37M | ROLL PIN 3 X 14MM |
| 3151 | P05093151 | FORK |
| 3152 | PSB35M | CAP SCREW M8-1.25 X 60 |
| 3153 | P05093153 | PACKING |
| 3154 | PS07M | PHLP HD SCR M4-.7 X 8 |
| 3155 | PSB33M | CAP SCREW M5-.8 X 12 |
| 3156 | P05093156 | WASHER |
| 3157 | P05093157 | SLEEVE |
| 3158 | P05093158 | O-RING 16 X 2.65MM |
| 3159 | P05093159 | LEVER |

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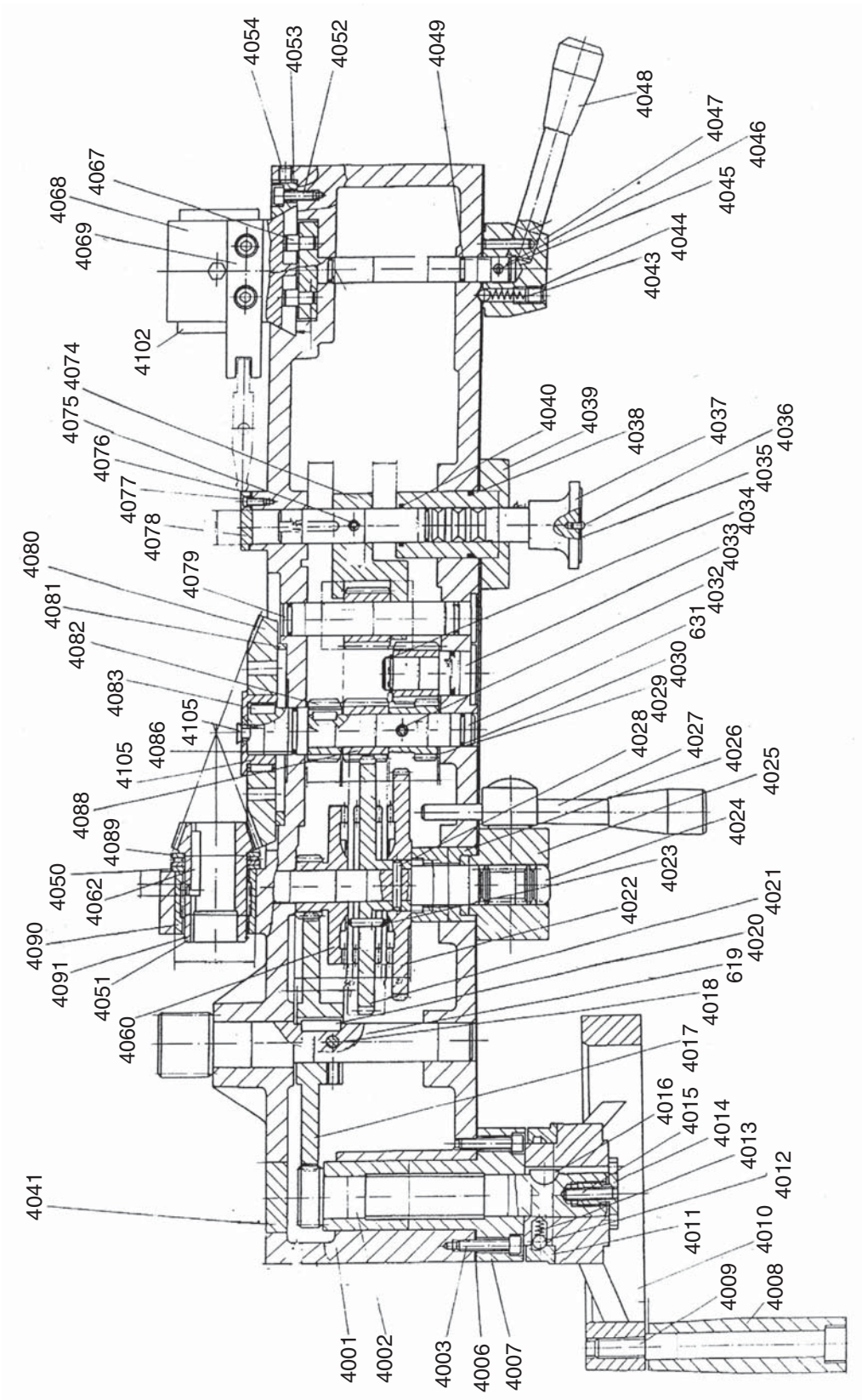
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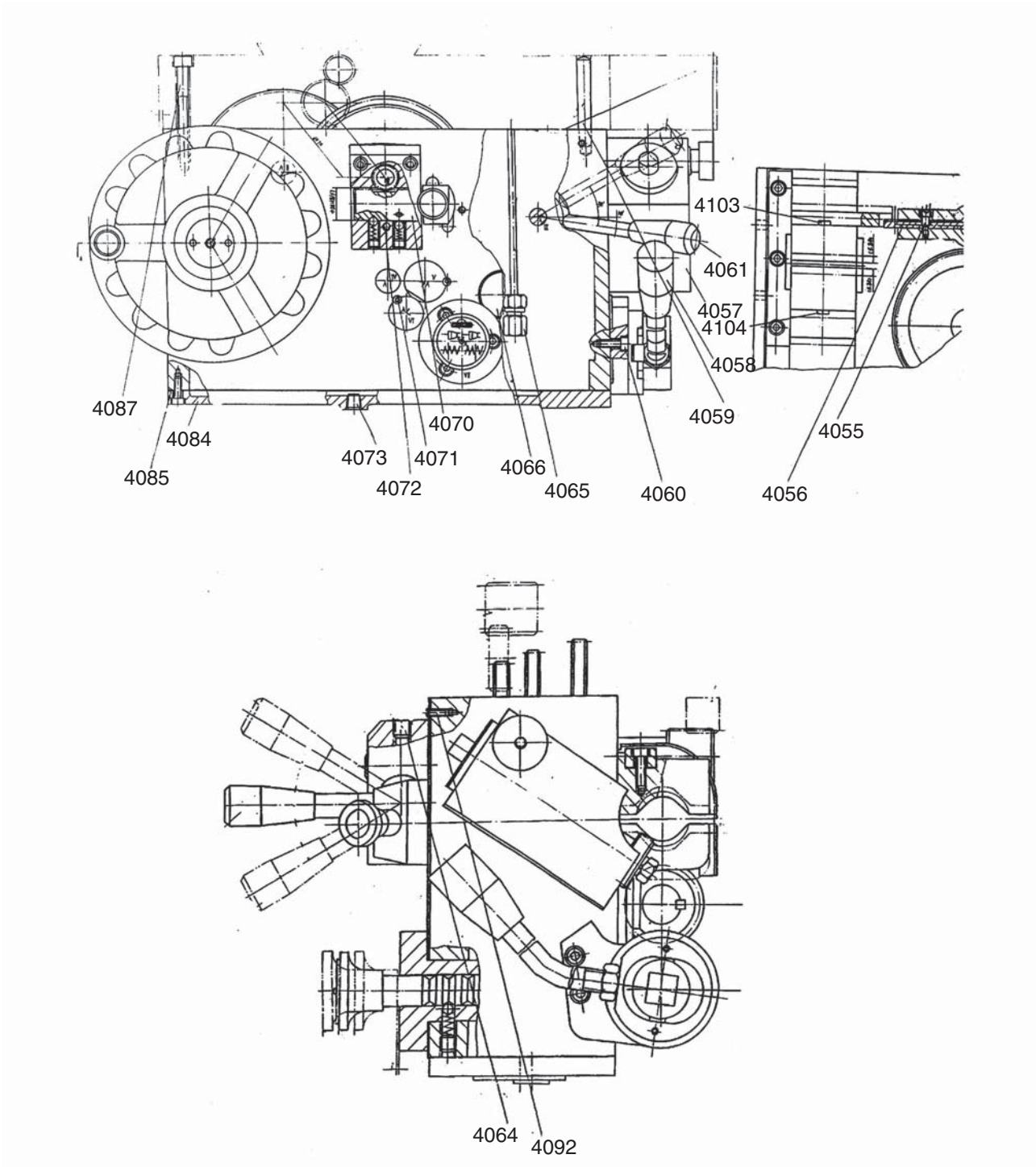
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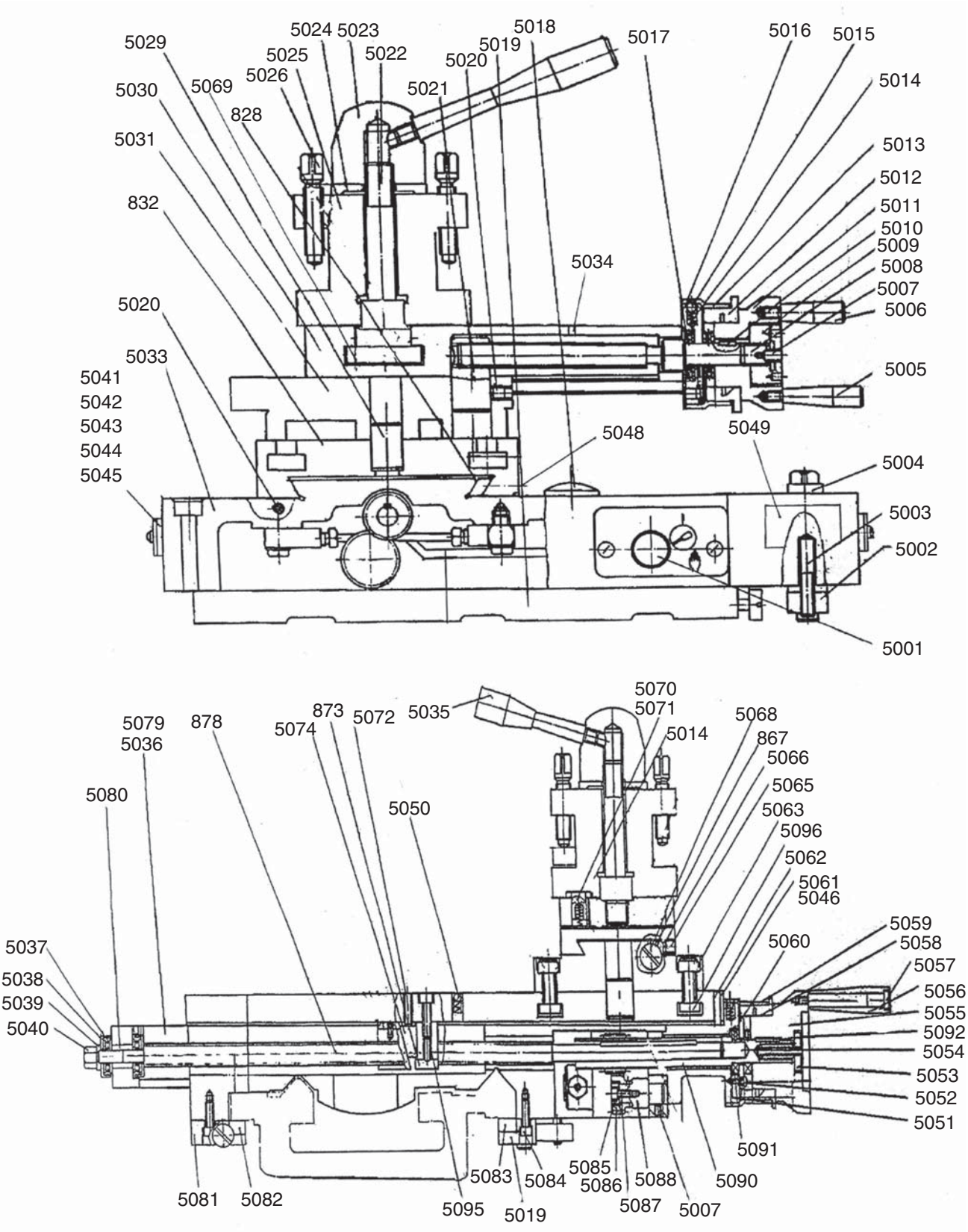
# Apron Parts List

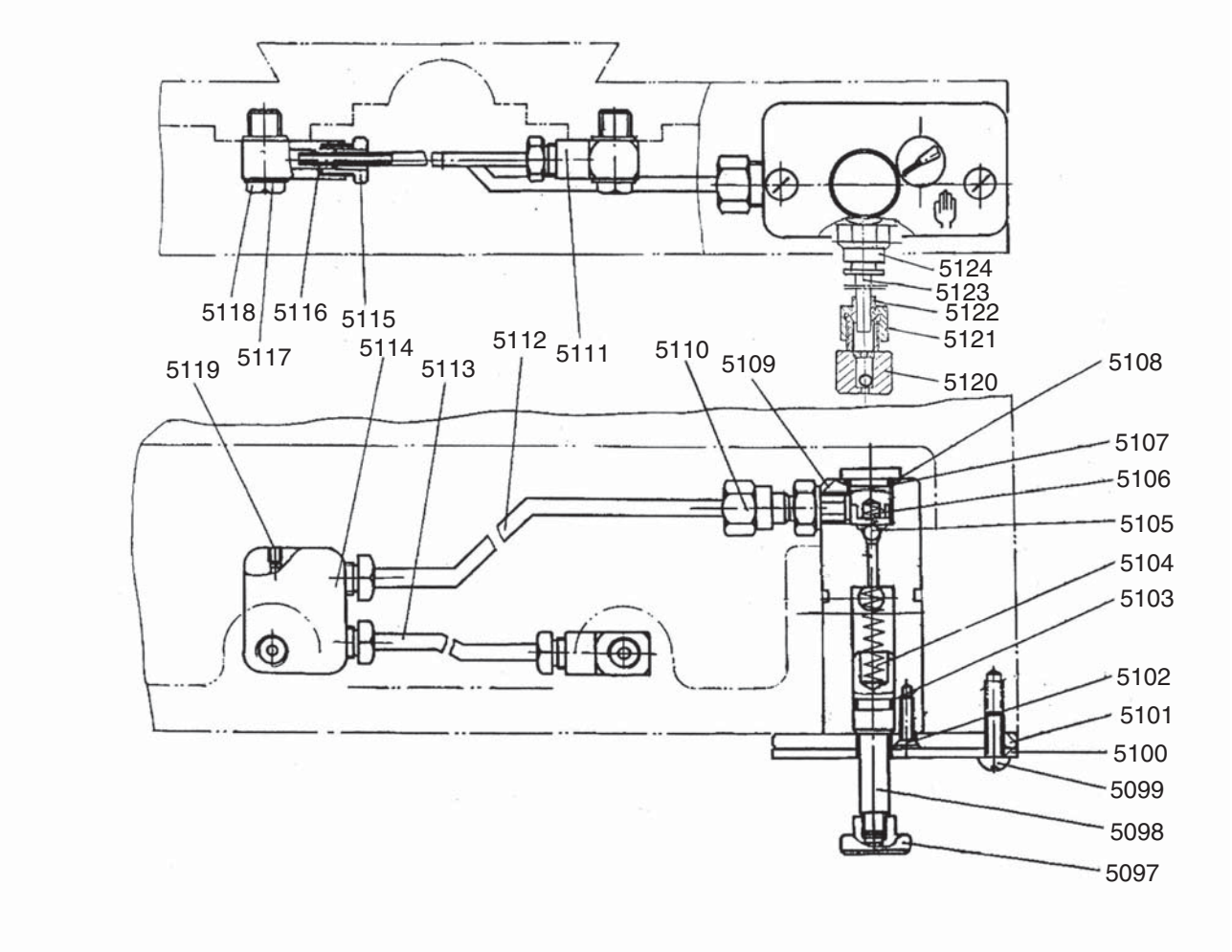
| REF | PART # | DESCRIPTION |
|---|---|---|
| 619 | P05090619 | SHAFT |
| 631 | P05090631 | SHAFT |
| 4001 | P05094001 | APRON CASTING |
| 4002 | P05094002 | SHAFT |
| 4003 | PSB38M | CAP SCREW M5-.8 X 25 |
| 4006 | P05094006 | NAME PLATE |
| 4007 | P05094007 | SLEEVE |
| 4008 | P05094008 | HANDLE |
| 4009 | P05094009 | CAP SCREW |
| 4010 | P05094010 | HAND WHEEL |
| 4011 | P05094011 | DIAL |
| 4012 | P05092156 | STEEL BALL 6.5MM |
| 4013 | P05094013 | COMPRESSION SPRING |
| 4014 | P05094014 | SCREW PLUG |
| 4015 | PSS24M | SET SCREW M5-.8 X 25 |
| 4016 | P05094016 | WOODRUFF KEY 5 X 6.5 X 16MM |
| 4017 | P05094017 | GEAR 81-TOOTH |
| 4018 | PSB04M | CAP SCREW M6-1 X 10 |
| 4020 | PK147M | KEY 6 X 6 X 18MM |
| 4021 | P05094021 | GEAR 80/60-TOOTH |
| 4022 | P05094022 | GEAR 72/60-TOOTH |
| 4023 | P05094023 | DOWEL PIN 4 X 20mm |
| 4024 | P05094024 | SHAFT |
| 4025 | P05094025 | LEVER HUB |
| 4026 | P05094026 | SLEEVE |
| 4027 | P05094027 | LEVER |
| 4028 | PRP88M | ROLL PIN 5 X 22MM |
| 4029 | P05094029 | GEAR 18-TOOTH |
| 4030 | P05094030 | O-RING 11.2 X 2.65MM |
| 4032 | PRP88M | ROLL PIN 5 X 22MM |
| 4033 | P05094033 | SHAFT |
| 4034 | PR06M | EXT RETAINING RING 16MM |
| 4035 | P05094035 | INDICATOR PLATE |
| 4036 | P05094036 | RIVET 2 X 6MM |
| 4037 | P05094037 | SHAFT |
| 4038 | P05094038 | O-RING 25.8 X 3.55MM |
| 4039 | P05094039 | SLEEVE |
| 4040 | P05094040 | O-RING 16 X 1.8MM |
| 4041 | P05094041 | PLUG |
| 4043 | PEC015M | E-CLIP 8MM |
| 4044 | PSB52M | CAP SCREW M8-1.25 X 10 |
| 4045 | PRP29M | ROLL PIN 5 X 45MM |
| 4046 | P05094046 | SHAFT |
| 4047 | P05094047 | LEVER HUB |
| 4048 | P05094048 | HANDLE |
| 4049 | P05094030 | O-RING 11.2 X 2.65MM |
| 4050 | P05094050 | THRUST WASHER |

| REF | PART # | DESCRIPTION |
|---|---|---|
| 4051 | P05094051 | BEVEL-DRIVE GEAR 23-TOOTH |
| 4052 | PSB24M | CAP SCREW M5-.8 X 16 |
| 4053 | P05094053 | GIB |
| 4054 | PSS26M | SET SCREW M5-.8 X 6 |
| 4055 | P05094055 | CAP SCREW |
| 4056 | P05094056 | LEVER |
| 4057 | P05094057 | WORM GEAR BRACKET |
| 4058 | P05094058 | SPINDLE CONTROL LEVER |
| 4059 | P05094059 | DOWEL PIN 8 X 60MM |
| 4060 | PSB01M | CAP SCREW M6-1 X 16 |
| 4061 | P05094061 | GEAR 18/60-TOOTH |
| 4062 | P05094062 | KEY |
| 4064 | P05094064 | BALL OILER 8MM |
| 4065 | P05094065 | VALVE |
| 4066 | P05093090 | SIGHT GLASS 20MM |
| 4067 | P05094067 | CASTING |
| 4068 | P05094068 | HALF BRACKET |
| 4069 | P05094069 | STOP |
| 4070 | P05094070 | GEAR SHAFT 14-TOOTH |
| 4071 | PSS02M | SET SCREW M6-1 X 6 |
| 4072 | PSB78M | CAP SCREW M5-.8 X 40 |
| 4073 | P05094073 | PLUG |
| 4074 | P05094074 | FORK |
| 4075 | PRP73M | ROLL PIN 4 X 30MM |
| 4076 | P05094076 | PACKING |
| 4077 | PSB17M | CAP SCREW M4-.7 X 10 |
| 4078 | P05094078 | COVER |
| 4079 | P05094079 | SHAFT |
| 4080 | P05094080 | BEVEL-DRIVE GEAR 64-TOOTH |
| 4081 | P05094081 | THRUST WASHER |
| 4082 | P05094082 | GEAR 18-TOOTH |
| 4083 | PK10M | KEY 5 X 5 X 12MM |
| 4084 | P05094084 | BOTTOM PLATE |
| 4085 | P05094085 | PACKING |
| 4086 | P05094086 | O-RING 17 X 2.65MM |
| 4087 | PSB35M | CAP SCREW M8-1.25 X 60 |
| 4088 | P05094088 | GEAR 18-TOOTH |
| 4089 | P8106 | THRUST BEARING 8106 |
| 4090 | P05094090 | NEEDLE BEARING |
| 4091 | PR15M | EXT RETAINING RING 30MM |
| 4092 | PS38M | PHLP HD SCR M4-.7 X 10 |
| 4102 | P05094102 | HALF NUT |
| 4103 | PB02M | HEX BOLT M6-1 X 12 |
| 4104 | PB04M | HEX BOLT M6-1 X 10 |
| 4105 | P05094105 | INPUT BUSHING |
| 4106 | PFH06M | FLAT HD SCR M6-1 X 20 |

# Cross Slide, Compound Rest, Oil Pump



# Oil Pump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# Cross Slide, Compound Rest, & Oil Pump Parts List

| REF | PART # | DESCRIPTION |
|---|---|---|
| 828 | P0509828 | GIB |
| 832 | P0509832 | COVER-CROSS SLIDING |
| 867 | P05090867 | GIB |
| 873 | P05090873 | HALF NUT |
| 878 | P05090878 | FEED SCREW |
| 5001 | P05095001 | PUMP BODY |
| 5002 | P05095002 | CLAMP BLOCK |
| 5003 | P05095003 | SUPPORT SCREW |
| 5004 | P05095004 | CLAMP SCREW |
| 5005 | P05095005 | HANDLE |
| 5006 | P05095006 | HANDLE |
| 5007 | PSB68M | CAP SCREW M6-1 X 8 |
| 5008 | P05095008 | FEED SCREW |
| 5009 | P05095009 | PLUG |
| 5010 | PK69M | KEY 4 X 4 X 12MM |
| 5011 | P05095011 | HANDLE |
| 5012 | P05095012 | DIAL-COMPOUND REST |
| 5013 | P05095013 | STEEL BALL |
| 5014 | P05095014 | COMPRESSION SPRING 0.5 X 5 X 18 |
| 5015 | P05093077 | STEEL BALL 6MM |
| 5016 | P05095016 | SEAT |
| 5017 | P8101 | THRUST BEARING 8101 |
| 5018 | P05095018 | PLUG |
| 5019 | P05095019 | GIB |
| 5020 | PSS01M | SET SCREW M6-1 X 10 |
| 5021 | P05095021 | BLOCK NUT |
| 5022 | P05095022 | TOOL POST SHAFT |
| 5023 | P05095023 | CLAMPING HANDLE |
| 5024 | P05095024 | RUB WASHER |
| 5025 | P05095025 | TOOL POST ASSEMBLY |
| 5026 | P05095026 | TOOLING SCREW M10-1.5 X 50 |
| 5029 | P05095029 | SHAFT |
| 5030 | P05095030 | COMPOUND REST |
| 5031 | P05095031 | SWIVEL TABLE |
| 5033 | P05095033 | CARRIAGE |
| 5034 | P05095034 | BALL OILER 6MM |
| 5035 | P05095035 | CLAMP HANDLE |
| 5036 | PSS09M | SET SCREW M8-1.25 X 20 |
| 5037 | P8100 | THRUST BEARING 8100 |
| 5038 | P05095038 | BEARING COVER |
| 5039 | P05095039 | BRACKET |
| 5040 | P05095040 | CLAMPING NUT M10-1.5 |
| 5041 | P05095041 | WIPER |
| 5042 | P05095042 | WIPER COVER |
| 5043 | PSB24M | CAP SCREW M5-.8 X 16 |
| 5044 | P05095044 | WIPER |
| 5045 | P05095045 | WIPER COVER |
| 5046 | PSB33M | CAP SCREW M5-.8 X 12 |
| 5048 | PSB11M | CAP SCREW M8-1.25 X 16 |
| 5049 | P05095049 | PLATE |

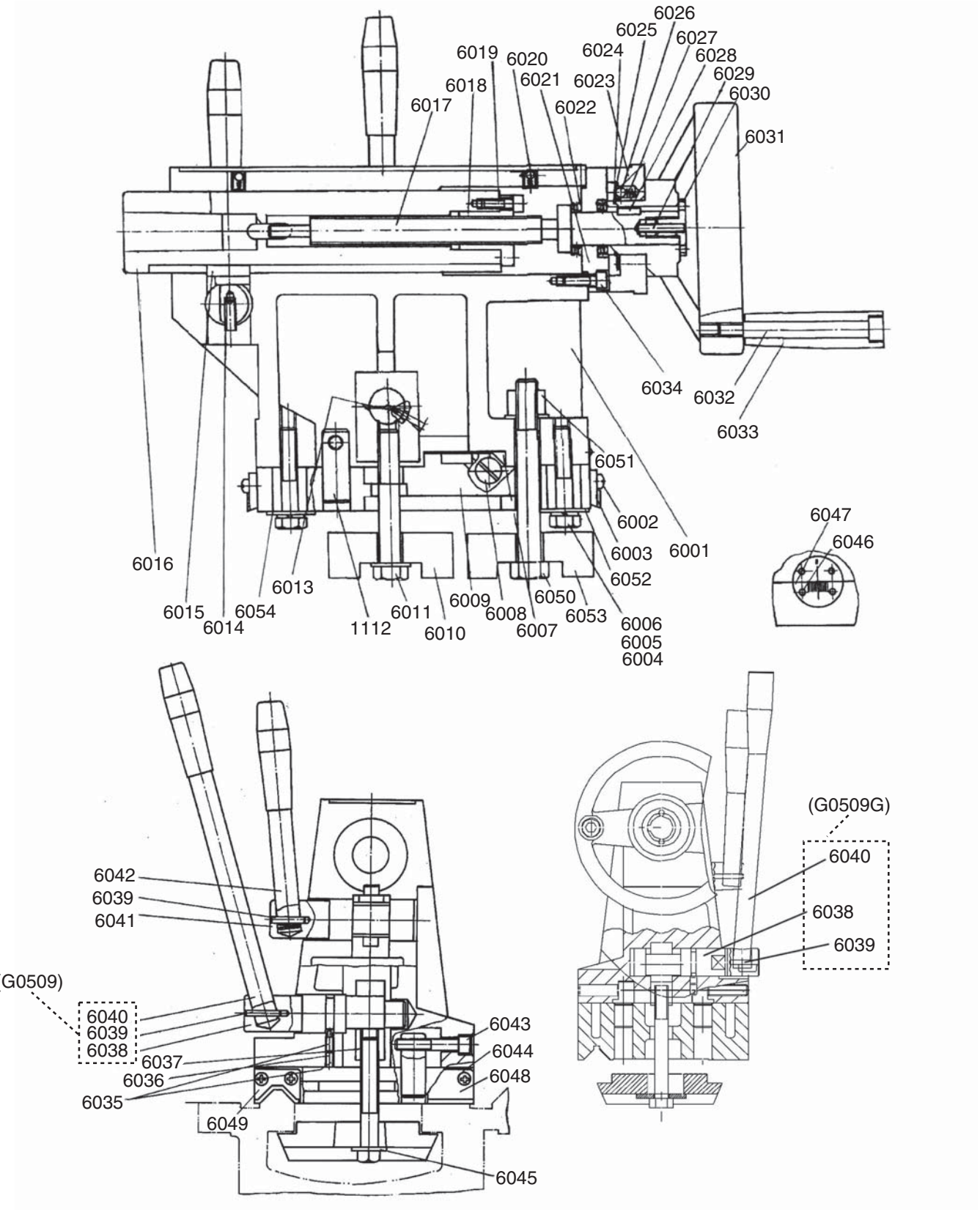
| REF | PART # | DESCRIPTION |
|---|---|---|
| 5050 | P05094064 | BALL OILER 8MM |
| 5051 | P05095051 | BRACKET |
| 5052 | PSB17M | CAP SCREW M4-.7 X 10 |
| 5053 | P05095053 | CLAMP SCREW |
| 5054 | PS31M | PHLP HD SCR M6-1 X 35 |
| 5055 | P05095055 | WHEEL |
| 5056 | P05095056 | HANDLE SPACER |
| 5057 | P05095057 | SHOULDER SCREW |
| 5058 | P05095058 | FEED DIAL |
| 5059 | P05095059 | HANDLE SPACER |
| 5060 | P05095060 | THRUST WASHER |
| 5061 | P05095061 | WIPER COVER |
| 5062 | P05095062 | WIPER |
| 5063 | PN02M | HEX NUT M10-1.5 |
| 5065 | PSS20M | SET SCREW M8-1.25 X 8 |
| 5066 | P05095066 | BASE |
| 5068 | P05095068 | GIB SCREW |
| 5069 | P05095069 | SLEEVE |
| 5070 | P05095070 | BUSHING |
| 5071 | P05095071 | DETENT PIN |
| 5072 | PSS25M | SET SCREW M6-1 X 20 |
| 5074 | P05095074 | BRACKET |
| 5079 | P05095079 | BRACKET |
| 5080 | P05095080 | SPACER |
| 5081 | P05095081 | GIB |
| 5082 | P05095082 | GIB |
| 5083 | P05095083 | GIB |
| 5084 | PSB02M | CAP SCREW M6-1 X 20 |
| 5085 | P05095085 | THRUST WASHER |
| 5086 | P05095086 | GEAR 25-TOOTH |
| 5087 | PSB50M | CAP SCREW M5-.8 X 10 |
| 5088 | P05095088 | SHAFT |
| 5090 | P05095090 | GEAR SHAFT 16-TOOTH |
| 5091 | P8103 | THRUST BEARING 8103 |
| 5092 | PK96M | KEY 3 X 3 X 20MM |
| 5095 | PSB06M | CAP SCREW M6-1 X 25 |
| 5096 | P05095096 | T-BOLT M10-1.5 X 25 |
| 5097 | P05095097 | KNOB |
| 5098 | P05095098 | PISTON |
| 5099 | P05095099 | DOME HD SCR M5-.8 X 15 |
| 5100 | P05095100 | PUMP INDICATOR PLATE |
| 5101 | P05095101 | PLATE |
| 5102 | PFH05M | FLAT HD SCR M5-.8 X 12 |
| 5103 | P05095103 | O-RING 8 X 2.65MM |
| 5104 | P05095104 | COMPRESSION SPRING 1 X 7 X 45MM |
| 5105 | P05095105 | STEEL BALL 5MM |
| 5106 | P05095106 | COMPRESSION SPRING 0.5 X 4 X 15MM |
| 5107 | P05095107 | PLUG |
| 5108 | P05095108 | O-RING 11.2 X 1.8MM |

# Cross Slide, Compound Rest, & Oil Pump Parts List

| REF | PART # | DESCRIPTION |
|---|---|---|
| 5109 | P05095109 | PUMP |
| 5110 | P05095110 | BRASS FITTING |
| 5111 | P05095111 | TUBE JOINT |
| 5112 | P05095112 | LUBE TUBE 5MM |
| 5113 | P05095112 | LUBE TUBE 5MM |
| 5114 | P05095114 | DISTRIBUTOR |
| 5115 | P05095115 | BRASS FITTING |
| 5116 | P05095116 | DOUBLE TAPER SHEATH |

| REF | PART # | DESCRIPTION |
|---|---|---|
| 5117 | P05095117 | SEALING WASHER 10MM |
| 5118 | P05095118 | SPECIAL PORT BOLT |
| 5119 | PSS08M | SET SCREW M4-.7 X 5 |
| 5120 | P05095120 | VALVE |
| 5121 | P05095121 | BRASS FITTING NUT |
| 5122 | P05095122 | BRASS FITTING |
| 5123 | P05095123 | LUBE TUBE 6 X 150MM |
| 5124 | P05095124 | BRASS FITTING |

# Tailstock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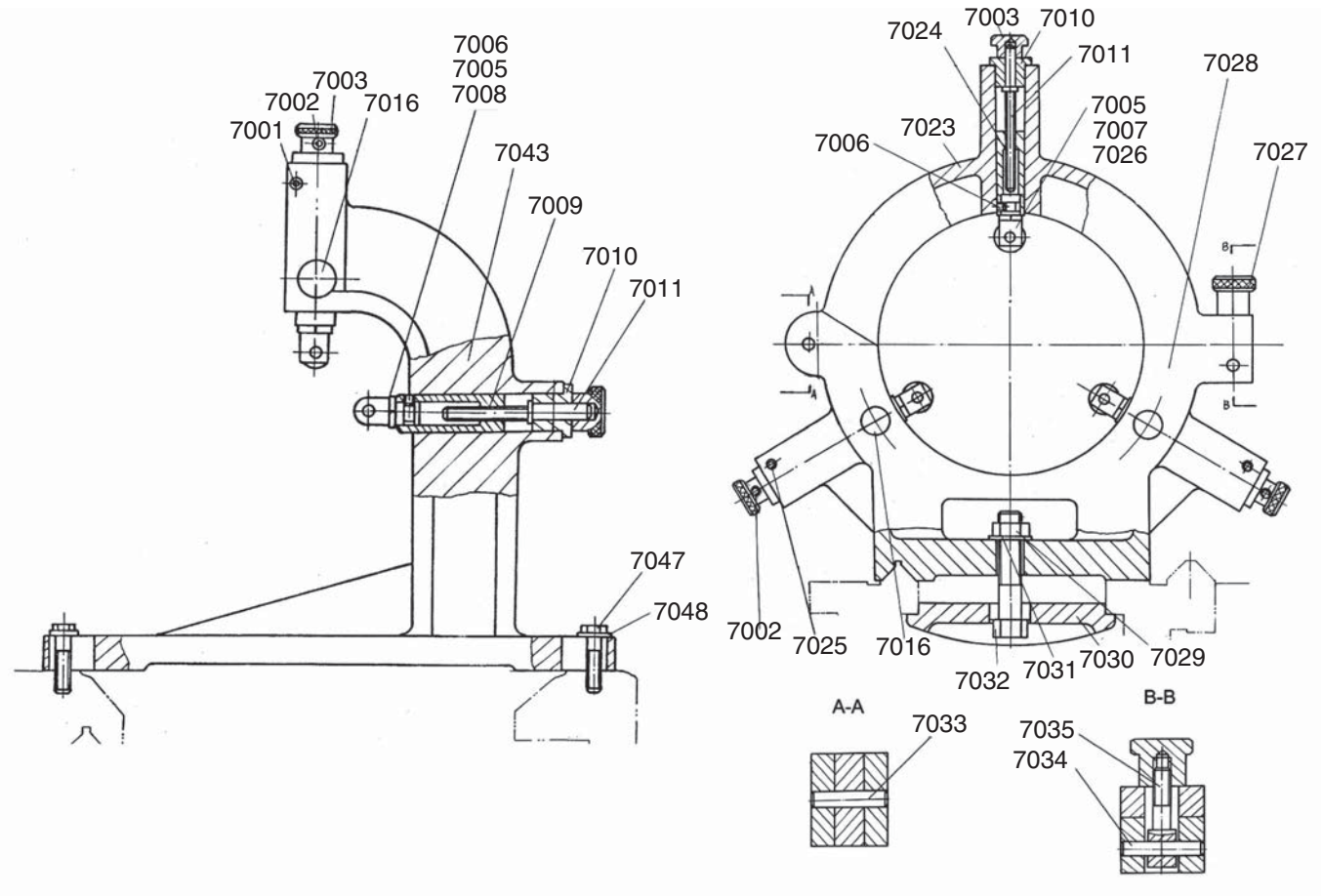
# Tailstock Parts List

| REF | PART # | DESCRIPTION |
|---|---|---|
| 1112 | P05091112 | SHAFT |
| 6001 | P05096001 | TAILSTOCK (G0509) |
| | P0509G6001 | TAILSTOCK (G0509G) |
| 6002 | PS38M | PHLP HD SCR M4-.7 X 10 |
| 6003 | P05096003 | BEDWAY WIPER |
| 6004 | PB116M | HEX BOLT M10-1.5 X 45 |
| 6005 | PLW06M | LOCK WASHER 10MM |
| 6006 | PLW06M | LOCK WASHER 10MM |
| 6007 | P05096007 | GIB |
| 6008 | P05096008 | GIB SCREW |
| 6009 | P05096009 | TAIL STOCK BASE (G0509) |
| | P0509G6009 | TAIL STOCK BASE (G0509G) |
| 6010 | P05096010 | CLAMPING BLOCK |
| 6011 | PB121M | HEX BOLT M12-1.75 X 100 |
| 6013 | PRP24M | ROLL PIN 5 X 16MM |
| 6014 | PSS64M | SET SCREW M6-1 X 15 |
| 6015 | P05096015 | KEY |
| 6016 | P05096016 | QUILL (G0509) |
| | P0509G6016 | QUILL (G0509G) |
| 6017 | P05096017 | FEED SCREW (G0509) |
| | P0509G6017 | FEED SCREW (G0509G) |
| 6018 | P05096018 | FEED NUT |
| 6019 | PSS11M | SET SCREW M6-1 X 16 |
| 6020 | P05094064 | BALL OILER 8MM |
| 6021 | P05096021 | BRACKET |
| 6022 | P8104 | THRUST BEARING 8104 |
| 6023 | P05096023 | DIAL |
| 6024 | PR37M | EXT RETAINING RING 32MM |
| 6025 | P05096025 | SEALING RING |
| 6026 | P05092156 | STEEL BALL 6.5MM |
| 6027 | P05096027 | FLAT SPRING 0.6 X 5 X 16MM |

| REF | PART # | DESCRIPTION |
|---|---|---|
| 6028 | PK23M | KEY 5 X 5 X 25MM |
| 6029 | PSS24M | SET SCREW M5-.8 X 25 |
| 6030 | P05096030 | PLUG |
| 6031 | P05096031 | HAND WHEEL |
| 6032 | P05096032 | SHOULDER BOLT |
| 6033 | P05096033 | HANDLE |
| 6034 | PSB15M | CAP SCREW M5-.8 X 20 |
| 6035 | PSS01M | SET SCREW M6-1 X 10 |
| 6036 | PSS01M | SET SCREW M6-1 X 10 |
| 6037 | P05096037 | ADJUSTING BLOCK |
| 6038 | P05096038 | CLAMPING HUB (G0509) |
| | P0509G6038 | RECIEVER HUB (G0509G) |
| 6039 | PRP56M | ROLL PIN 4 X 25MM |
| | PK23M | KEY 5 X 5 X 25 (G0509G) |
| 6040 | P05096040 | LEVER (G0509) |
| | P0509G6040 | LEVER (G0509G) |
| 6041 | P05096041 | SHAFT |
| 6042 | P05096042 | LEVER |
| 6043 | PSB05M | CAP SCREW M8-1.25 X 50 |
| 6044 | P05096044 | BEDWAY WIPER |
| 6045 | PW06M | FLAT WASHER 12MM |
| 6046 | P05096046 | RIVET 2 X 8MM |
| 6047 | P05096047 | OFFSET INDICATOR PLATE |
| 6048 | P05096048 | BEDWAY WIPER PLATE |
| 6049 | P05096049 | BEDWAY WIPER PLATE |
| 6050 | PB76M | HEX BOLT M12-1.75 X 110 |
| 6051 | P05096051 | HIGH NUT M12-1.75 |
| 6052 | PW04M | FLAT WASHER 10MM |
| 6053 | P05096053 | CLAMPING BLOCK |
| 6054 | PW04M | FLAT WASHER 10MM |

# Steady Rest & Follow Rest

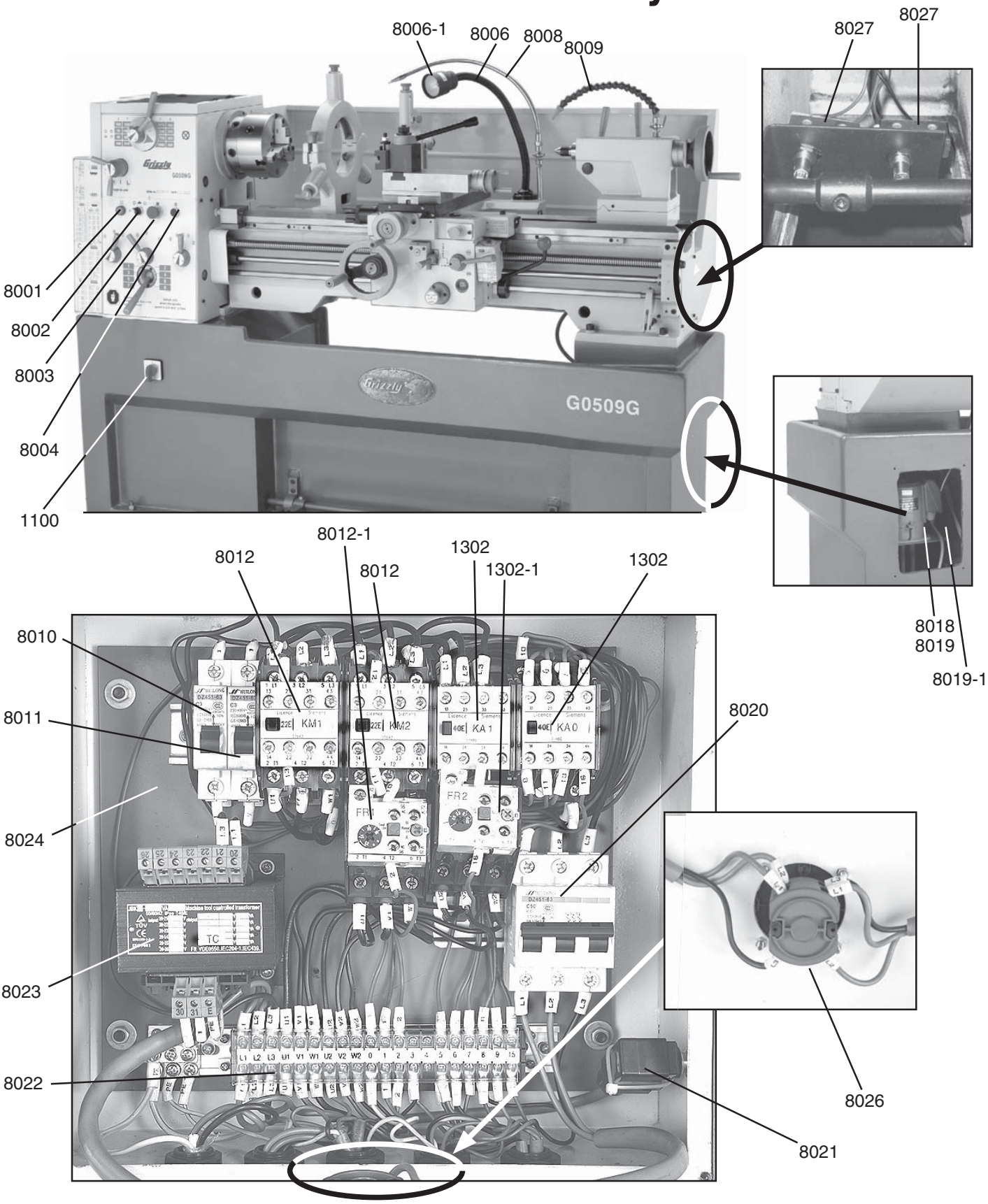



# Steady Rest & Follow Rest Parts List

| REF | PART # | DESCRIPTION |
|---|---|---|
| 7001 | PRP26M | ROLL PIN 5 X 26MM |
| 7002 | PSS03M | SET SCREW M6-1 X 8 |
| 7003 | P05097003 | KNURLED KNOB |
| 7005 | P05097005 | SUPPORT SHAFT |
| 7006 | PSS02M | SET SCREW M6-1 X 6 |
| 7007 | P05097007 | BALL BEARING W/WHEEL |
| 7008 | P626ZZ | BALL BEARING 626ZZ |
| 7009 | P05097009 | SLEEVE |
| 7010 | P05097010 | FLANGE BUSHING |
| 7011 | P05097011 | SCREW SHAFT |
| 7016 | P05097016 | KNURLED THUMB KNOB M10-1.5 X 25 |
| 7023 | P05097023 | UPPER CASTING |
| 7024 | P05097024 | SLEEVE |

| REF | PART # | DESCRIPTION |
|---|---|---|
| 7028 | P05097028 | LOWER CASTING |
| 7027 | P05097027 | LARGE KNURLED KNOB |
| 7029 | PN13M | HEX NUT M16-2 |
| 7030 | P05097030 | CLAMPING BRACKET |
| 7031 | PW08M | FLAT WASHER 16MM |
| 7032 | PB159M | HEX BOLT M16-2 X 80 |
| 7025 | PRP45M | ROLL PIN 5 X 32MM |
| 7033 | P05097033 | DOWEL PIN 10 X 50MM |
| 7035 | P05097035 | CLAMPING SCREW |
| 7034 | PRP80M | ROLL PIN 10 X 50mm |
| 7043 | P05097043 | FOLLOW REST CASTING |
| 7047 | PSB47M | CAP SCREW M10-1.5 X 40 |
| 7048 | PW04M | FLAT WASHER 10MM |

# Electrical & Coolant System

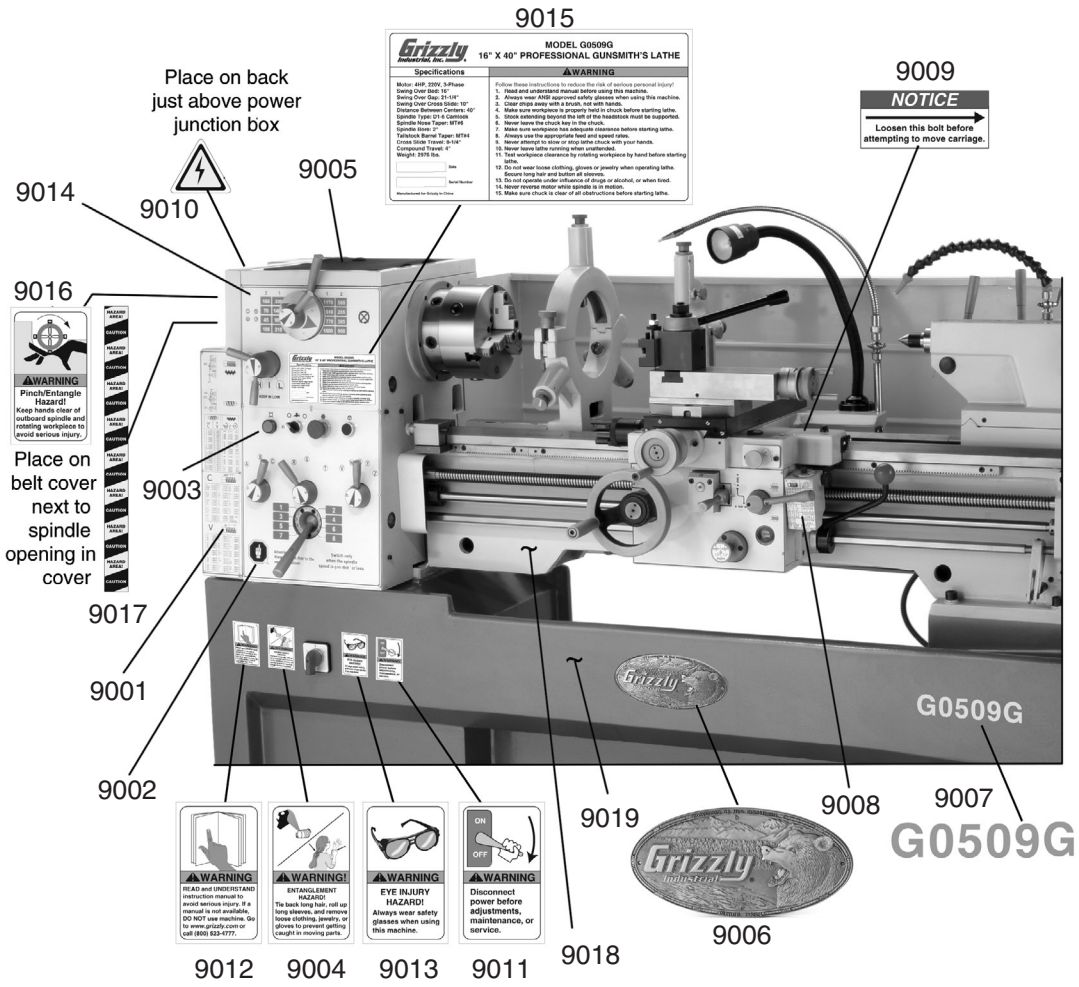


# Electrical & Coolant System Parts List

| REF | PART # | DESCRIPTION |
|---|---|---|
| 1100 | P05091100 | TWO-SPEED SWITCH |
| 1302 | P05091302 | CONTACTOR SIEMENS 40E, 24V |
| 1302-1 | P05091302-1 | THERMAL RELAY SIEMENS, 0.05-0.32 AMP |
| 8001 | P05098001 | POWER LAMP |
| 8002 | P05098002 | PUMP SWITCH |
| 8003 | P05098003 | EMERGENCY STOP SWITCH |
| 8004 | P05098004 | JOG BUTTON |
| 8006 | P05098006 | WORK LAMP ASSEMBLY |
| 8006-1 | P05098006-1 | BULB |
| 8008 | P05098008 | CUTTING FLUID TUBE KIT |
| 8009 | P0509G8009 | TAILSTOCK FLUID TUBE KIT (G0509G) |
| 8010 | P05098010 | FUSE HOUSING |
| 8011 | P05098011 | FUSE HOUSING |

| REF | PART # | DESCRIPTION |
|---|---|---|
| 8012 | P05098012 | CONTACTOR SIEMENS 22E, 24V |
| 8012-1 | P05098012-1 | THERMAL RELAY SIEMENS, 3UA52 10-16 AMP |
| 8018 | P05098018 | PUMP |
| 8019 | P05098019 | PUMP MOTOR 220V 3-PH |
| 8019-1 | P05098019-1 | PUMP POWER CORD ASSY |
| 8020 | P05098020 | CIRCUIT BREAKER SET |
| 8021 | P05098021 | LIMIT SWITCH |
| 8022 | P05098022 | 40-POST TERMINAL BLOCK |
| 8023 | P05098023 | TRANSFORMER |
| 8024 | P05098024 | MAIN POWER BOX |
| 8026 | P05098026 | MAIN POWER ON/OFF SWITCH |
| 8027 | P05098027 | MOTOR ROTATION LIMIT SWITCH |

# Labels & Placement




# Labels Parts List

| REF | PART # | DESCRIPTION |
|---|---|---|
| 9001 | P05099001 | THREADING CHART |
| 9002 | P05099002 | GEARBOX PANEL |
| 9003 | P05099003 | SWITCH PANEL |
| 9004 | P05099004 | ENTANGLEMENT SLEEVES LABEL |
| 9005 | P05099005 | RUBBER MAT |
| 9006 | G8589 | GRIZZLY LOGO PLATE |
| 9007 | P05099007 | MODEL NUMBER LABEL (G0509) |
| | P0509G9007 | MODEL NUMBER LABEL (G0509G) |
| 9008 | P05099008 | THREAD DIAL CHART |
| 9009 | P05099009 | UNLOCK CARRIAGE LABEL |
| 9010 | PLABEL-14 | ELECTRICITY LABEL |

| REF | PART # | DESCRIPTION |
|---|---|---|
| 9011 | PLABEL-36 | DISCONNECT POWER LABEL |
| 9012 | PLABEL-12 | READ MANUAL LABEL |
| 9013 | PLABEL-11 | SAFETY GLASSES LABEL |
| 9014 | P05099014 | HEADSTOCK PANEL |
| 9015 | P05099015 | DATA LABEL (G0509) |
| | P0509G9015 | DATA LABEL (G0509G) |
| 9016 | P0509G9016 | ENTANGLEMENT LABEL (G0509G) |
| 9017 | P0509G9017 | WARNING TAPE (G0509G) |
| 9018 | PPAINT-9 | GRAY TOUCH-UP PAINT |
| 9019 | PPAINT-1 | GREEN TOUCH-UP PAINT |

## ⚠WARNING

**Safety labels warn about machine hazards and ways to prevent injury. The owner of this machine MUST maintain the original location and readability of the labels on the machine. If any label is removed or becomes unreadable, REPLACE that label before using the machine again. Contact Grizzly at (800) 523-4777 or www.grizzly.com to order new labels.**

# Grizzly Industrial, Inc. WARRANTY CARD

Name _____

Street _____

City _____ State _____ Zip _____

Phone # _____ Email _____ Invoice # _____

Model # _____ Order # _____ Serial # _____

*The following information is given on a voluntary basis. It will be used for marketing purposes to help us develop better products and services.* ***Of course, all information is strictly confidential.***

**1.** How did you learn about us?

| | | |
|---|---|---|
| ____ Advertisement | ____ Friend | ____ Catalog |
| ____ Card Deck | ____ Website | ____ Other: |

**2.** Which of the following magazines do you subscribe to?

| | | |
|---|---|---|
| ____ Cabinet Maker | ____ Popular Mechanics | ____ Today's Homeowner |
| ____ Family Handyman | ____ Popular Science | ____ Wood |
| ____ Hand Loader | ____ Popular Woodworking | ____ Wooden Boat |
| ____ Handy | ____ Practical Homeowner | ____ Woodshop News |
| ____ Home Shop Machinist | ____ Precision Shooter | ____ Woodsmith |
| ____ Journal of Light Cont. | ____ Projects in Metal | ____ Woodwork |
| ____ Live Steam | ____ RC Modeler | ____ Woodworker West |
| ____ Model Airplane News | ____ Rifle | ____ Woodworker's Journal |
| ____ Modeltec | ____ Shop Notes | ____ Other: |
| ____ Old House Journal | ____ Shotgun News | |

**3.** What is your annual household income?

| | | |
|---|---|---|
| ____ $20,000-$29,000 | ____ $30,000-$39,000 | ____ $40,000-$49,000 |
| ____ $50,000-$59,000 | ____ $60,000-$69,000 | ____ $70,000+ |

**4.** What is your age group?

| | | |
|---|---|---|
| ____ 20-29 | ____ 30-39 | ____ 40-49 |
| ____ 50-59 | ____ 60-69 | ____ 70+ |

**5.** How long have you been a woodworker/metalworker?

____ 0-2 Years ____ 2-8 Years ____ 8-20 Years ____ 20+ Years

**6.** How many of your machines or tools are Grizzly?

____ 0-2 ____ 3-5 ____ 6-9 ____ 10+

**7.** Do you think your machine represents a good value? _____Yes _____No

**8.** Would you recommend Grizzly Industrial to a friend? _____Yes _____No

**9.** Would you allow us to use your name as a reference for Grizzly customers in your area?
**Note:** *We never use names more than 3 times.* _____Yes _____No

**10.** Comments: _____

_____

_____

CUT ALONG DOTTED LINE

FOLD ALONG DOTTED LINE

Place Stamp Here

**GRIZZLY INDUSTRIAL, INC.**
**P.O. BOX 2069**
**BELLINGHAM, WA 98227-2069**

FOLD ALONG DOTTED LINE

Send a Grizzly Catalog to a friend:

Name_____

Street_____

City_____State_____Zip_____

TAPE ALONG EDGES--PLEASE DO NOT STAPLE

# WARRANTY AND RETURNS

Grizzly Industrial, Inc. warrants every product it sells for a period of **1 year** to the original purchaser from the date of purchase. This warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence, accidents, repairs or alterations or lack of maintenance. This is Grizzly's sole written warranty and any and all warranties that may be implied by law, including any merchantability or fitness, for any particular purpose, are hereby limited to the duration of this written warranty. We do not warrant or represent that the merchandise complies with the provisions of any law or acts unless the manufacturer so warrants. In no event shall Grizzly's liability under this warranty exceed the purchase price paid for the product and any legal actions brought against Grizzly shall be tried in the State of Washington, County of Whatcom.

We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special, or consequential damages arising from the use of our products.

To take advantage of this warranty, contact us by mail or phone and give us all the details. We will then issue you a "Return Number," which must be clearly posted on the outside as well as the inside of the carton. We will not accept any item back without this number. Proof of purchase must accompany the merchandise.

The manufacturers reserve the right to change specifications at any time because they constantly strive to achieve better quality equipment. We make every effort to ensure that our products meet high quality and durability standards and we hope you never need to use this warranty.

Please feel free to write or call us if you have any questions about the machine or the manual.

Thank you again for your business and continued support. We hope to serve you again soon.

# grizzly.com
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